



सत्यमेव जयते

भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

केंद्रिय विद्युत प्राधिकरण

Central Electricity Authority

सदस्य (तापीय) कार्यालय

Office of Member (Thermal)

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सेवा में,

Thermal Power Generating Plants/ Utilities (Public or Private) – As per list

विषय:- Advisory on Spare Parts Management in Thermal Power Plants - के बारे में.

महोदय,

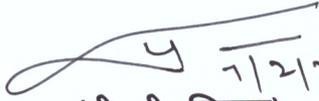
During a meeting taken on 01.08.2019 by Hon'ble Minister of State (IC) for Power, New & Renewable Energy on crisis and disaster management plan for power sector, concern was raised on delay observed in arranging spares/ restoration equipment during an eventuality and urgent need to reduce the overall response time and CEA was directed to take up the issue of availability of spares and inventory management with power utilities. Hon'ble Minister also suggested for preparing standard inventory list of minimum spares requirement specific to similar kind of power establishment and setting up a monitoring mechanism for its compliance and ensuring digitization of spares management by all the power plant utilities.

A strong and effective spare parts planning system with consideration of keeping high priority spares in reserve as a contingency for any issues that arise unexpectedly is of high importance for a thermal power station. A typical list of critical spares for coal based TPPs prepared based on inputs collected from some utility is enclosed herewith for reference.

An effective spare parts management plan has the advantages of (i) increased service level of inventory, (ii) improved equipment uptime, and (iii) decreased investment in inventory. Therefore, in order to have an effective spare parts management system in thermal power plants across country, all power plants/ utilities are hereby advised as follows:

- a) All power plants should identify critical spares and should have critical spare parts list (separate for similar type of units).
- b) Power Plants to ensure adequate inventory levels based on lead time of procurement for various types of spares to counter any eventuality or stoppages and reduce overall response time.
- c) Plants should have their spare parts management system fully digitized.
- d) Plants should identify other power stations having similar type of units supplied by same OEMs in the country and have effective communication to arrange for spares in case of any exigency.

भवदीय,



7/2/2020

(पी. डी. सिवाल)

सदस्य (तापीय), के.वि.प्रा.

TYPICAL LIST OF CRITICAL SPARE PARTS FOR THERMAL POWER STATION

CONTENT

S.No	Description	Page No.
1	Boiler	1
2	Turbine	6
2.1	Spare for KWU Turbine	6
A	High pressure turbine	6
B	Intermediate pressure turbine	6
C	LPT	7
D	Bearing	7
E	Jacking oil system	7
F	Control oil system and governing rack	7
G	Lubricating oil system	7
H	Coupling bolts	8
I	Turning gear	8
J	HPSV/CV	8
K	IPSV/CV	8
L	LPBP SV/CV	8
M	HPBP	8
N	MS strainer	8
O	HRH strainer	8
P	Condenser	8
Q	Evacuation system	9
R	Heaters	9
S	Feed water system	9
T	Condensate system	9
U	Turbine gland seal steam system	9
V	TD BPF TURBINE	9
W	Generator seal rings	9
X	ACW system	9
2.2	Spare for Diaphragm Type Turbine	9
A	High pressure turbine	9

B	Intermediate pressure turbine	10
C	LPT	10
D	Coupling Bolts	10
E	Bearing	10
F	Lubricating Oil System	10
G	Governing System	10
H	HPSV(ESV)/CV , IPSV(IV)/CV, Transfer pipe	10
I	Turbine gland seal steam and evacuation system	11
J	Heaters	11
K	Feed Water System	11
L	Condensate System	11
M	Generator	11
N	Critical Bends & Pipes	11
O	LPBP	11
P	HPBP	11
3	Coal Handling Plant	11
3.1	Mechanical	11
A	Paddle feeders	11
B	Idlers	12
C	Conveyor gear boxes	13
D	Conveyor drive and conveyor belt	13
E	Pulleys	14
F	Coal crusher	14
G	Vgf/vibrating screening feeder	15
H	Stacker/reclaimer (Including boom)	16
I	Tripper	17
J	Wagon tippler and accessories	17
3.2	Electrical	17
A	Paddle feeder	18
B	Conveyors	18
C	Crushing equipment	18
D	Stacker reclaimer	18
E	Wagon tippler and accessories	18
4	Cooling Tower	18

A	Mechanical /electrical (Drive) ITEMS (for each unit cooling towers)	19
5	Compressed Air System	19
6	HVAC System	20
7	Ash Handling Plant	20
8	Electrical	22
8.1	Spares For 400 KV/220 KV/132 KV Switchyard Equipment	22
A	Circuit breakers	22
B	Isolators	23
C	Current transformer complete in all respects including terminal connectors.	23
D	Capacitor voltage transformer complete in all respects including terminal connectors.	23
E	Surge arrester complete in all respects including terminal connector and with surge counter and lead.	24
8.2	Spares For 765 KV	24
A	Circuit breakers	24
B	Isolators	24
C	Current transformer	25
D	Capacitor voltage transformer	25
E	Surge arrester	25
8.3	Spares For 765/400/220/132 KV Switchyard Equipment	25
8.4	Spares For GIS	27
A	Gas insulated switchgear	27
8.5	Spares For Control & Relay Panel	28
A	Protective relays	28
B	Indicating meters	28
C	Others	29
D	Substation automation system and generator protection (if applicable)	29
8.6	Spares For GT/ICTS/ST/UAT	30
8.7	Spares For Any Misc. Service Transformer	31
8.8	Spares For Dry Type Transformer	31
8.9	Spares For Shunt Reactor	31
8.10	Spares For Neutral Grounding Reactor	31
8.11	Spares For 200 MW/500 MW/660 MW Unit SG	32

A	VFD system	32
B	VFD transformer	32
C	L.T. MCCs (SB MCC)	33
D	Electrostatic precipitator (ESP)	34
E	ID fan	35
F	ID fan lube oil system	35
G	FD fan	36
H	FD fan lube oil system	36
I	PA fan	36
J	PA fan lube oil system	36
K	Seal air fan	36
L	Mill motor and aph motor	36
M	Air pre heater motor	36
N	Soot Blowers	36
O	Electrical Actuators	36
8.12	Spares For 200/500/660 MW Unit TG	37
A	Generator & Auxiliaries	37
B	Gas System	39
C	Seal Oil System	39
D	Stator Water Cooling System	40
E	Eot Crane For Turbine Hall	40
F	Eot Crane For Turbine Hall (Vfd Drive)	40
G	Hydrogen Generation Plant	41
H	Motors	41
8.13	Spares For GCB	41
8.14	Spares For Busduct	42
A	Generator bus duct	42
B	11 kV Busduct	43
C	6.6 kV Busduct	43
D	3.3 kV Busduct	43
8.15	Spares For 33 KV/11KV/6.6KV/3.3KV Switchgears	43
A	33 KV switchgears	43
B	11 KV/6.6 KV/3.3KV switchgears	45

8.16	Spares For 200/500/660 MW Units LT SWGR and LT Busduct	46
8.17	Spares For Battery And Battery Charger	48
A	Battery	48
B	220 V battery charger	48
8.18	Spares For Service/ Passenger Elevator	49
8.19	Spares For DG Set (>1000KVA)	49
8.20	Spares For DG Set (Upto 1000 KVA)	51
8.21	Spares For PLCC Package	52
8.22	Spares Unit Station Lighting & Cables	52
A	Lamps	52
B	Lighting fixture parts	52
C	Lighting panels	54
D	Lighting control switch/receptacles	54
E	Junction boxes	54
F	Power & control cables	54
8.23	Spares For Offsite Area	55
A	Coal handling plant	55
B	Ash handling plant	55
C	Cooling tower plant	55
D	Pre-treatment plant	55
E	Primary and secondary air compressor room	55
F	Fire hydrant system	56
9	Spares For C&I Systems	56
A	Spares for control system/DDCMIS/PLC (covering FSSS/Turbine/OLCS/CLCS including Gas turbines)	56
B	C&I spares for main turbine, TD BFP and HP Bypass	56
C	C&I spares for Boiler, CLCS & OLCS	57
D	Control cables	57
E	AHP	58-59

List of Critical Spares

Sl. No.	Particulars	Quantity	Remarks
1	Boiler		
i	Economizer straight tube of each type size thickness and material	250 mtrs	
ii	Economizer tube bends of each type size thickness and material	20 nos.	
iii	Water wall straight tube of each type size thickness and material	125 mtrs.	
iv	LTSH straight tube of each type size thickness and material	100 mtrs.	
v	LTSH tube bends of each type size thickness and material	10 nos.	
vi	Intermediate temp. SH/Platen Super Heater straight tube of each type size thickness and material	100 mtrs.	
vii	Intermediate temp. SH/Platen Super Heater tube bends of each type size thickness and material	10 Nos.	
viii	Final Super Heater Straight Tube of each type size thickness and material	100 mtrs.	
ix	Final Super Heater tube bends of each type size thickness and material	10 Nos.	
x	RH straight tube of each type size thickness and material	150 mtrs.	
xi	RH tube bends of each type size thickness and material	10 Nos.	
xii	Dissimilar metal weld joint spot piece for SH and RH of each type size thickness and material	40 Nos.	
xiii	Manhole gasket for Drum and for bottom ring headers	10 sets	
xiv	Complete pump and motor assy for SG water circulation pump	1 No.	May be pooled
xv	Journal bearing for SG water circulation pump	1 set	
xvi	Thrust bearing for SG water circulation pump	1 set	
xvii	Casing wear ring for SG water circulation pump	1 set	
xviii	Impeller wear ring for SG water circulation pump	1 set	
xix	ID fan bearing	2 sets	

xx	ID fan blade assy / impeller with shaft	1 set	May be pooled
xxi	ID fan coupling between fan and motor	2 sets	May be pooled
xxii	ID fan hydraulic servomotor / IGV	1 set	
xxiii	Runner assy for ID fan fluid coupling – if applicable	1 set	
xxiv	Lube oil pump assy for ID fan	1 set	
xxv	Lube oil cooler assy for ID fan	2 sets	
xxvi	FD fan bearing	1 set	
xxvii	FD fan blade assy with shaft	1 No.	May be pooled
xxviii	FD fan coupling between fan and motor	1 No.	May be pooled
xxix	Lube oil pump assy for FD fan	1 No.	
xxx	Lube oil cooler assy for FD fan	2 Nos.	
xxxi	FD fan hydraulic servomotor	1 No.	May be pooled
xxxii	PA fan bearing	1 set	
xxxiii	PA fan blade assy with shaft	1 set	May be pooled
xxxiv	PA fan coupling between fan and motor	1 No.	
xxxv	PA fan hydraulic servomotor	1 No.	May be pooled
xxxvi	Lube oil pump assy for PA fan	1 No.	
xxxvii	Lube oil cooler assy for PA fan	2 Nos.	
xxxviii	Coal pulveriser rollers/tyres/grinding balls	6 Sets	
xxxix	Coal pulveriser bull ring segments/bowl/rings	3 Sets	
xl	Mail journal and spring	3 Sets	May be pooled
xli	Mill gear box	2 Nos.	May be pooled
xlvi	Mill shaft/yoke	2 Nos.	
xlvi	Set of all bearings for coal pulveriser	3 Sets	
xliv	Mill discharge valve assy	3 Sets	
xliv	Pump assy for mill lube oil system	2 Nos.	
xlvi	Cooler assy for mill lube oil system	2 Nos.	
xlvi	Feeder belt	6 Nos.	
xlvi	Feeder belt drive reducer	2 Nos.	
xlvi	Hot air gate seals	8 Sets	
i	Seals of ESP isolating gates	2 Sets	
li	Coal compartment assembly	2 Sets	
lii	Fuel oil guns	4 Nos.	
liii	Fuel oil burner isolation valves	4 Nos.	
liv	Seal air fan impeller with shaft	1 No.	

lv	Seal air fan bearing	1 Set	
lvi	PAPH/SAPH guide bearings	2 Nos.	May be pooled
lvii	PAPH/SAPH support bearing	2 Nos.	May be pooled
lviii	PAH/SAPH CE/HI/HE heating element	1 Set	
lix	PAPH/SAPH air motor	2 Nos.	
lx	PAPH/SAPH speed reducer	1 No.	May be pooled
lxi	PAH/SAPH fluid coupling	2 Nos.	
lxii	PAPH/SAPH speed reducer clutch assembly	2 Nos.	
lxiii	PAPH/SAPH rack and pinion assy	1 Set	May be pooled
lxiv	PAPH/SAPH pump assy for Support/Guide lube oil system	1 No.	
lxv	PAPH/SAPH Cooler assy for Support/Guide lube oil system	1 No.	
lxvi	Complete boiler drum separator safety valve of each type	1 No.	
lxvii	Upper adjusting ring for boiler drum / separator safety valve of each type	2 Nos.	
lxviii	Lower adjusting ring for boiler drum/separator safety valve of each type	2 Nos.	
lxix	Safety valve disc for boiler drum/separator safety valve if each type	2 Nos.	
lxx	Safety valve stem for boiler drum/separator safety valve of each type	1 No.	
lxxi	Safety valve Spindle for boiler drum/separator safety valve of each type	1 No.	
lxxii	Safety valve guide for boiler drum/separator safety valve of each type	2 Nos.	
lxxiii	Safety valve locking pin set for boiler drum/separator safety valve of each type	1 Set	
lxxiv	Complete SH safety valve of each type	1 No.	
lxxv	Upper adjusting ring for SH safety valve of each type	2 Nos.	
lxxvi	Lower adjusting ring for SH safety valve of each type	2 Nos.	
lxxvii	Safety valve disc for SH safety valve of each type	2 Nos.	

lxxviii	Safety valve stem for SH safety valve of each type	1 No.	
lxxix	Safety valve Spindle for SH safety valve of each type	1 No.	
lxxx	Safety valve guide for SH safety valve of each type	2 Nos.	
lxxxi	Safety valve locking pin set for SH safety valve of each type	1 Set	
lxxxii	Complete RH safety valve of each type	1 No.	
lxxxiii	Upper adjusting ring for RH safety valve of each type	1 No.	
lxxxiv	Lower adjusting ring for RH safety valve of each type	1 No.	
lxxxv	Safety valve disc for RH safety valve of each type	2 Nos.	
lxxxvi	Safety valve stem for RH safety valve of each type	1 No.	
lxxxvii	Safety valve Spindle for RH safety valve of each type	1 No.	
lxxxviii	Safety valve guide for RH safety valve of each type	2 Nos.	
lxxxix	Safety valve locking pin set for RH safety valve of each type	1 Set	
xc	Complete ERV valve assy including pilot valve for SH of each type	1 No.	
xc i	Disc for ERV main valve for SH of each type	2 Nos.	
xc ii	Spring for ERV main valve for SH of each type	2 Nos.	
xc iii	Seal rings for ERV main valve for SH of each type	2 Nos.	
xc iv	Seal bushing for ERV main valve for SH of each type	2 Nos.	
xc v	Disc and stem assy for ERV pilot valve for SH of each type	2 Nos.	
xc vi	Bushing for ERV pilot valve for SH of each type	2 Nos.	
xc vii	Spring for ERV pilot valve for SH of each type	2 Nos.	
xc viii	Seal ring for ERV pilot valve for SH of each type	2 Nos.	
xc ix	Complete ERV including pilot valve for RH of each type	1 No.	
c	Disc for ERV main valve for RH of each type	2 Nos.	
ci	Spring for ERV main valve for RH of each type	2 Nos.	

cii	Seal rings for ERV main valve for RH of each type	2 Nos.	
ciii	Seal bushing for ERV main valve for RH of each type	2 Nos.	
civ	Disc and stem assy for EV pilot valve for RH of each type	2 Nos.	
cv	Bushing for ERV pilot valve for RH of each type	2 Nos.	
cvi	Spring for ERV pilot valve for RH of each type	2 Nos.	
cvii	Seal ring for ERV pilot valve for RH of each type	2 Nos.	
cviii	Pressure seal gasket for Main steam stop valve	2 Nos.	
cix	Stem for Main steam stop valve and its integral bypass	1 No.	
cx	Disc for Main steam stop valve and its integral bypass	1 No.	
cxii	Seat ring for Main steam stop valve and its integral bypass	2 Sets.	
cxiii	Complete SH spray control valve assy	2 Nos.	
cxiiii	Complete RH spray control valve assy	2 Nos.	
cxv	Aux steam pressure reducing cum desuperheating valve assy	1 No.	
cxvi	Class 1500 gate/globe valve assy 25mm/40mm/50mm/65mm/80mm/100mm	2 Nos.	
cxvii	Class 2500 gate/globe valve assy 25mm/40mm/50mm/65mm/80mm/100mm	2 Nos.	
cxviii	Complete assembly of water wall deslagger	4 Nos.	May be pooled
cxix	Complete valve assembly for water wall deslagge	6 Nos.	
cx	Complete assembly of LRSB	2 Nos.	May be pooled
cxx	Complete valve assembly for LRSB	2 Nos.	
cxxi	Complete valve assembly for PAPH/SAPH soot blower	2 Nos.	
cxxii	Reduction gear box and motor for SAPH/ PAPH soot blower oscillation	2 Nos.	May be pooled
cxxiii	Fabric material of different thickness and material for NMEJ	100 RM	
cxxiv	HP dozing pump assy	1 No.	
cxxv	LP dozing pump assy	1 No.	

cxxvi	Support Insulator for ESP	8 Nos.	
cxxvii	Shaft Insulator for ESP	20 Nos.	
cxxviii	Emitting electrode for ESP	500 Nos.	May be pooled
cxxix	Inner arm assy for ESP	30 Nos.	
cxxx	Outer arm assy for ESP	30 Nos.	
cxxxi	Gear box assy for emitting rapping system of ESP	10 Nos.	May be pooled
cxxxii	Gear box assy for collecting rapping system of ESP	10 Nos.	May be pooled
cxxxiii	Shock bar/anvil for ESP	40 Nos.	
2			
2	Turbine		
2.1	KWU Turbine		
A	High Pressure Turbine		
i	MS pipe/casing U-seal ring as per Drawing	2	
ii	MS pipe /casing U-seal ring- Unmachined	2	
iii	Inner/Outer casing U-seal ring as per Drawing	1	
iv	Inner-Outer casing U-seal ring - Unmachined	1	
v	Inner/Outer I-seal ring-Unmachined	1	May be pooled
vi	HPT exhaust Pipe/Casing U-seal ring Unmachined	1	
vii	HPT exhaust Pipe/Casing U-seal ring as per Drawing	1	
viii	CRH NRV flap, hinge pin assembly	1 set	May be pooled
ix	Breach Nut	1 set	May be pooled
x	Rotaing Blades	1 Set	May be pooled
xi	Rotor	1 no.	May be pooled
xii	Stationary Blades	1 set	May be pooled
xiii	Module	1 no.	May be pooled
xiv	Gland seal segments	1 set	
xv	Evacuation valve stem, disc and seat(if applicable)	1	
B	Intermediate Pressure Turbine		
i	Inlet pipe angle ring-Unmachined	1	
ii	Extraction Pipe Angle ring- Unmachined	1	
iii	Rotaing Blades	1 set	May be pooled
iv	Rotor	1	May be pooled
v	Stationary Blades	1 set	May be pooled
vi	Inner/Outer casing-Module	1	May be pooled

vii	Gland seal segments	1 set	
C	LPT		
i	Extraction-1 bellows	1 set	
ii	Extraction-2 bellows	1 set	
iii	Extraction-3 bellows	1 set	
iv	LPT inlet pipe bellows	1 set	
v	LPT casing to gland box bellows	1	May be pooled
vi	Clamping pieces and locking plates for free standing blades	1 set	
vii	Free standing Rotating Blades	1 set	May be pooled
viii	Rotor	1	May be pooled
ix	Stationary Blades	1 set	May be pooled
x	Gland seal segments	1 set	
D	Bearing		
i	Brg. 1 babbited shell with matching support	1 no.	
ii	Brg. 2 babbited shell with matching support and thrust pads	1 set	
iii	Brg. 2 liner	1	
iv	Brg. 3 babbited shell with matching support	1	
v	Brg. 4 babbited shell with matching support	1	
vi	Brg 5 babbited shell and spherical support pads	1	
vii	Brg. 6 babbited shell and spherical support pads	1	
viii	Brg. 7 babbited shell with matching support (if applicable)	1	
E	Jacking Oil system		
i	Jacking oil flexible hoses for each bearing	1 set	
ii	Jacking oil pump assembly	1	
iii	Jacking oil to each bearing NRV	1 set	
iv	Jacking oil header pressure regulating valve assembly	1	
F	Control Oil system and Governing Rack		
i	Hydraulic Governor bellows	1	
ii	Main Trip Valve assembly	1	
iii	All Kinds of "O" rings	1 set	
iv	Filter elements	1 set	
G	Lubricating Oil System		

i	Main Oil pump assembly complete with Bearings	1 no.	
ii	HPT/MOP gear Coupling	1 no.	
iii	MOP suction Oil Injector assembly	1 set	
iv	Oil strainer/filter	1	
v	AOP assembly	1	
vi	EOP assembly	1	
H	Coupling Bolts		
i	HP/IP	1 set	
ii	IP/LP	1 set	
iii	LP/Gen	1 set	
I	Turning gear		
i	Stationery Blades/ Nozzle	1 set	
ii	Rotating blades	1 set	
J	HPSV/CV		
i	Stop valve stem and disc	1	
ii	Stop valve U seal ring	1	
iii	Stop valve test valve liner with Margin	1 set	
iv	Stop valve pilot	1 set	
v	Control valve stem and disc	1	
vi	Control valve U seal ring	1	
K	IPSV/CV		
i	Stop valve stem and disc	1	
ii	Stop valve U seal ring	1	
iii	Stop valve test valve liner	1	
iv	Stop valve Pilot	1	
v	Control valve stem and disc	1	
vi	Control valve U seal ring	1	
L	LPBP SV/CV		
i	Stop valve stem and disc	1	
ii	LPBP spray pressure switch	4	
M	HPBP		
i	Pressure control valve stem, seat	2 set	
ii	BPE valve stem	2 set	
N	MS Strainer		
i	Element along blanking device gasket, sealing ring, protection ring metallic ring.	1	
O	HRH Strainer		

i	Element along blanking device gasket, sealing ring, protection ring .(metallic Ring).	1	
P	Condenser		
i	CW Pipe to Condenser flexible joint assembly	2 no.	
Q	Evacuation System		
i	Manhole gaskets	1	
ii	Vacuum pump assembly	1 set	
iii	Cooler element	1	
R	Heaters		
i	LP heater-1 safety valve shell side	1	
ii	LP heater-2 safety valve shell side	1	
iii	LP heater-3 safety valve shell side	1	
iv	HP heater-5 safety valve shell side	1	
v	HP heater-6 safety valve shell side	1	
S	Feed water System		
i	BFP assembly	1	
ii	Bearings	1 set	
iii	Discharge valve stem and disc	1 set	
iv	Hydraulic coupling assembly	1	May be pooled
T	Condensate system		
i	CEP assembly	1	
ii	CEP Suction strainer	1	
iii	CEP discharge valve stem and disc	1	
iv	Condensate line NRV before Deaerator assembly	1	
U	Turbine gland seal steam system		
i	Gland steam condenser assembly	1	May be pooled
ii	Gland steam control valves actuator	1	
V	TD BPF Turbine		
	Set of Bearings	1	
W	Generator seal rings		
i	Turbine and Generator and seal rings	1 set	
X	ACW system		
i	Pump assembly	1	
ii	Motor/Pump coupling	1	
2.2	Spares for Diaphragm Type Turbine		
A	High Pressure Turbine		
i	Spare HP Rotor	1	

	ii	HP Diaphragms	1 set	
B		Intermediate Pressure Turbine		
	i	Spare IP Rotor	1	
	ii	IP Diaphragms	1 set	
C		LPT		
	i	Spare LP Rotor	1	
	ii	LP Diaphragms	1 set	
D		Coupling Bolts		
	i	Oversize HP-IP Coupling Bolts	1 set	
	ii	Oversize IP-LP Coupling Bolts	1 set	
	iii	Oversize LP-Gen Coupling Bolts	1 set	
	iv	Generator- Exciter Coupling Bolts	1 set	
E		Bearing		
	i	Bearings and Thrust pads.	1 set	
	ii	Oil guard fins	1 set	
F		Lubricating Oil System		
	i	MOP Gear Coupling	1	
	ii	MOP rotating assembly	1	
	iii	MOP Bearings	1 set	
	iv	MOP seals	1 set	
	v	Lub oil cooler tube nest assembly	1	
G		Governing System		
	i	Speed Governor	1	
	ii	Over speed governor and its internals	1 set	
	iii	Control valve Servomotor assembly	1 set	
H		HPSV(ESV)/CV , IPSV(IV)/CV, Transfer pipe		
	i	Serrated ring of ESV	2	
	ii	Serrated ring each of HPT /IPT transfer pipe lines.	2	
	iii	HPT Control valves(Valve cone with stem).	1 set	
	iv	IPT Control Valves(Valve cone with stem)	1 set	
	v	Liner of each HPT CV	1	
	vi	Liner of each IPT CV	1	
	vii	HPT Cams	1 set	
	viii	HPT& IPT control valve stem each	1	
	ix	HPT Control valve Rollers with Bearings	4	
	x	ESV and IV stop valve(Valve cone with stem)	1 no each	

	xi	ESV damper assembly	1	
	xii	ESV and IV strainer	1 piece	
I		Turbine gland seal steam and evacuation system		
	i	Nozzles set for main ejectors and Gland steam cooler	1 set	
	ii	Main ejector tube nest assembly	1	
	iii	GSC with Ejector tube nest assembly	1	
J		Heaters		
	i	LPH 2/3/4 tube nest assembly	1 set	
		HP heaters	1 set	
K		Feed water System		
	i	BFP Working oil cooler tube nest assembly	1	
	ii	BFP Lub oil cooler tube nest assembly	1	
	iii	BFP cartridge.	1	
L		Condensate system		
	i	CEP assembly	1	
M		Generator		
	i	Hydrogen seal assembly.	1 set	
N		Critical Bends & Pipes		
	i	Bends and pipes of various duties and types	1	Each for Drip system, Drain system, Condensate system, FW system, Extraction steam system, Pipe piece(MS, CRH, HRH)
O		LPBP		
	i	LP Bypass Control valve Seat, cone and stem	1 set	
P		HPBP		
	i	HP Bypass Control valve Seat ,cone and stem	1 set	
3		Coal Handling Plant		
3.1		Mechanical		
A		Paddle feeders		
	i	Gear box (Paddle Wheel, Traverse etc)	1 No of each type	

ii	Internal gear set including bearings of all gear boxes	1 set of each type	
iii	Rotor pump	1 No of each type	
iv	Hydraulic Motor (for Paddle Wheel, traverse)	1 No of each type	
v	Traverse pump	1 No of each type	
vi	Wheel and shaft assy	1 No of each type	
vii	Plummer block & bearings of all wheel	1 set of each type	
viii	Rotor assembly	1 set of each type	
ix	Hydraulic oil cooler	1 set of each type	
x	Hydraulic hoses of all type	2 sets of each type	
xi	Solenoid valves, pressure regulating valves & hydraulic circuit valves of all type	2 sets of each type	
xii	Oil Filter	1 set of each type	
B	Idlers		
i	35o troughing idlers complete with base frame and mounted brackets, etc.	10% of Population	
ii	Rolls for (i) above	10% of Population	
iii	Troughing idlers complete with base frame and mounting brackets, etc. (for belt feeders)	20% of Population	
iv	Rolls for (i) above	20% of Population	
v	35 ^o impact idlers complete with mounting brackets and base frame etc.	20% of Population	
vi	Rolls for (i) above	20% of Population	
vii	35 ^o troughing training idlers complete with base frame and brackets, etc. (if used)	20% of Population	
viii	Transition idler complete as in (1) above	20% of Population	
ix	Flat return idlers complete with mounting brackets, etc.	10% of Population	
x	Flat Return Idlers complete with mounting brackets, etc. (for belt feeders)	10% of Population	
xi	Flat return trainer complete with mounting brackets, etc.	10% of Population	
xiii	Belt cleaning spiral rubber disc return idler complete with mounting brackets, etc.	20% of Population	
xiv	Two roll with 10o troughing return idler assy.	10% of Population	
xv	Rolls for (i) above	10% of Population	

xvi	SS Idlers	20% of Population	
C	Conveyor gear boxes		
i	Hold back device	1 Set of each type and rating (for population upto 10 Nos.)	
		2 Sets of each type and rating (for population more than 10 Nos.)	
ii	Complete gear box assembly with hold back device	1 Set of each type and rating (for population upto 10 Nos.)	
		2 Sets of each type and rating (for population more than 10 Nos.)	
iii	Set of internal including oil seal,bearing ,each type	1 Set of each type and rating (for population upto 10 Nos.)	
		2 Sets of each type and rating (for population more than 10 Nos.)	
D	Conveyor drive and conveyor belt		
i	Gear Coupling complete	10% of each type	
ii	Coupling bolt set	2 Sets of each type and rating	
iii	Fluid coupling complete	1 Set of each type and rating (for population upto 10 Nos.)	
		2 Sets of each type and rating (for population more than 10 Nos.)	
iv	Runner & impeller assembly of fluid coupling	1 Set of each type and rating	
v	Fusible plug	10 Nos of each type	
vi	Scoop control assembly	1 Set of each type and rating	
vii	Mechanical face seal	2 Set of each type and rating	
viii	Resilliance disc assembly(if applicable)	1 Set of each type and rating	

ix	Multi Disc Coupling/ Rubber Inserts etc	1 Set of each type and rating	
x	Hydraulic oil cooler	1 Set of each type and rating	
xi	Oil & water Pump with motor	1 Set of each type and rating	
xii	Conveyor Belt	1	
xiii	Main Conveyors	1	
xiv	Boom conveyor, belt feeder, intermediate conveyor	Two Complete lengths of each type plus 20% of population	
E	Pulleys		
i	Pulleys	1 No. of each type & size in pulley drum & shaft Ø (for population upto 10 Nos.)	
		2 Nos. of each type and size in pulley drum & shaft Ø (for population more than 10 Nos.)	
ii	Plummer block	2 No. of each type & size (for population upto 10 Nos.)	
		4 No. of each type & size (for population more than 10 Nos.)	
iii	Bearing of all type	4 Nos of each type	
iv	Bearing adopter, lock washer, lock nut	4 Nos of each type	
v	Life line shaft with plummer block & bearings assembly	2 Nos of each type	
F	Coal crusher		
i	Plummer Block assembly complete including bearing, lock nut, lock washer etc.(DE+NDE)	2 sets of each type	
ii	Hammer sets	4 sets of each type and size	
iii	Rotor assembly complete consisting of rotor shaft & keys, End discs, Centre discs, distance rings, suspension bars, disc clamping nuts and shaft extension etc. but without hammers, bearings and pillow blocks as applicable	1 set of each type and size	
iv	Crusher Shaft with key & Lock nut	1 No of each type	

v	Suspension bar with lock nut	4 set of each type and size	
vi	End discs, Centre discs, distance rings of crusher	1 set of each type and size	
vii	Disc locking device of crusher	1 set of each type and size	
viii	Cage bars, if applicable	2 sets of each type and size	
ix	Breaker plate	2 sets of each type and size	
x	Liners	2 sest of each type and size	
xi	Screen plate upper & lower	2 sets of each type and size	
xii	Crusher Fluid coupling complete assembly	1 No of each type	
xiii	Runner & impeller assembly of fluid coupling	1 No of each type	
xiv	Fusible plug	10 No of each type	
xv	Scoop control assembly with motor	1 No of each type	
xvi	Mechanical face seal	2 No of each type	
xvii	Resilliance disc assembly(if applicable)	1 No of each type	
xviii	Multi Disc Coupling/ Rubber Inserts etc	1 Set of each type and rating	
xix	Oil & water Pump with motor	1 No of each type	
xx	Hydraulic oil cooler	1 No of each type	
G	Vibrating screening feeder		
i	Screen plates	2 sets of each type and size	
ii	drive & driven unbalanced shafts	1 Set of each type and rating	
iii	Bearings	2 Set of each type and rating	
iv	vibrating blocks	1 Set of each type and rating	
v	main shaft (with universal coupling)	1 Set of each type and rating	
vi			
vii	unbalanced weights	1 Set of each type and rating	
viii	Vibrating Gear box	1 Set of each type and rating	
ix	Vibrating assembly consisting of all rotating parts including drive & driven unbalanced shafts including bearings, casing, spring, vibrating	1 set of each type	

	blocks, main shaft, sheave & unbalanced weights as applicable.		
x	Drive unit assembly (including electric motor, hydraulic pump, hydraulic motor, flexible shaft, gear box, as applicable)	1 set of each type	
xi	Spring set	2 set of each type	
xii	Hydraulic pump with motor	1 set of each type	
xiii	Hydraulic motor	1 set of each type	
xiv	Gear box	2 set of each type	
xv	Internal gear set of gear boxes	2 set of each type	
xvi	V belt	2 set of each type	
xvii	Drive & driven pulley of v belt drive	1 set of each type	
H	Stacker/reclaimer (including boom)		
i	Fluid coupling complete assembly	1 No of each type	
ii	Runner & impeller assembly of fluid coupling	1 No of each type	
iii	Fusible plug	10 No of each type	
iv	Mechanical face seal	1 No of each type	
v	Resiliance disc assembly	1 No of each type	
vi	Multi Disc Coupling/ Rubber Inserts etc	1 No of each type	
vii	Hydraulic pump for luffing, slewing, bucket wheel drive with electric motors, coupling, valves and servo motor, EP control	1 No of each type	
viii	Solenoid valves, pressure regulating valves & hydraulic circuit valves of all type	1 set of each type	
ix	Hydraulic cylinder including luffing cylinder	1 No of each type	
x	Repair kit for hydraulic cylinder including oil seals etc.	1 No of each type	
xi	Slew gearbox with shaft and pinion	1 No of each type	
xii	Slew bearing (for machines older than 20 years)	1 set of each type	
xiii	Coupling for gear boxes	1 set of each type	
xiv	Gearbox of bucket wheel	1 No of each type	
xv	Internal gear set of all gear boxes	1 set of each type	
xvi	Traverse drive assembly consisting of reducer, couplings, brake assy. etc.	1 No of each type	
xvii	Complete carriage wheel assembly)	1 No of each type	

xviii	Brake assembly with hydraulic & electric drive	1 set of each type	
xix	Brake shoe	2 set of each type	
xx	Plumber block & bearings of all wheel	2 set of each type	
xxi	Bearing adopter, lock washer, lock nut	2 set of each type	
xxii	Hydraulic oil cooler	1 set of each type	
xxiii	Hydraulic hoses of all type	2 set of each type	
xxiv	Rail Clamp Assembly	1 set of each type	
xxv	Chain Assy with sprocket (for Scrapper type reclaimer)	1 Set of each type and rating	
xxvi	Scrapper blades of Scrapper type reclaimer)	10 Nos of each type	
xxvii	Hoisting gear box (for Scrapper type reclaimer)	1 Set of each type and rating	
I	Tripper		
i	Drive gear box	1 No of each type	
ii	Internal gear set of all gear boxes	1 set of each type	
iii	Actuator for flap gate	1 set of each type	
iv	Drive shaft and wheel assly.	1 set of each type	
v	Plumber block & bearings of all wheel	1 set of each type	
vi	Bearing adopter, lock washer, lock nut	1 set of each type	
vii	Brake assembly with hydraulic & electric drive	1 set of each type	
viii	Rail Clamp Assembly	1 set of each type	
ix	Couplings	1 set of each type	
J	Wagon tripler and accessories		
i	Gear Box	1 set of each type	
ii	Internal gear set of all gear boxes	1 set of each type	
iii	Couplings	2 sets of each type	
iv	Hydraulic Pump	1 No of each type	
v	Hydraulic motor	1 No of each type	
vi	Open segment gear and pinion	1 set of each type	
vii	Flap Gate Actuators with motor, gear box etc	2 sets of each type	
viii	RPG Actuators with motor, gear box etc	1 sets of each type	
ix	Hydraulic hoses of all type	2 sets of each type	
x	Hydraulic oil cooler	1 sets of each type	
xi	Spur Gear Set	1 sets of each type	
3.2	Electrical		

A	Paddle feeder		
i	Motor(Rotor, traverse)	1 No of each type	
ii	eddy Current Coupling/Dynodrive assembly	1 set of each type	
iii	Electric card, modules	1 no. of each type	
iv	Flexible cable	1 length of each type	
v	Electronic Cards/modules	1 no. of each type	
B	Conveyors		
i	Drive motor	1 No. of each type and rating (for population upto 10 Nos.)	
		2 Nos. of each type, make & rating (for population more more than 10 Nos.)	
ii	Belt sway switches	5 % of each type	
iii	Pull cord switches	10 % of each type	
iv	Zero speed switches	10 % of each type	
v	Chute block switches	10 % of each type	
vi	Position switches for trippers, paddle feeders	5 % of each type	
vii	thruster brake assembly with drum	1 set of each type	
viii	Drive assembly of cable reeling system	1 set of each type	
C	Crushing equipment		
i	Motor of crusher	1 No of each type	
ii	VGF/VSF Drive Motor	1 No of each type	
D	Stacker reclaimer		
i	Motor	1 No of each type	
ii	Flexible cable(CCRD,PCRD)	One length od each type	
iii	Drive assembly of cable reeling system	1 set of each type	
iv	Electric cards, modules	one no. of each type	
E	Wagon tippler and accessories		
i	Drive Motor	1 No of each type	
ii	Tripper Drive motor	1 No of each type	
iii	Tripper Flexible cable	1 length of each type	
iv	Tripper Drive assembly of cable reeling system	1 set of each type	
4	Cooling Tower (IDCT)		

A	Mechanical /Electrical (Drive) items (for each unit cooling towers)		
i	Drive Shaft assembly complete with balanced couplings with all the fasteners	1 Set of each type per unit	
ii	Complete fan and hub assembly matched and balanced	1 set of each type per unit	
iii	Complete gear box	1 no of each type per unit	
iv	Internals of gear box including bearings	1 set of each type per unit	
v	Butterfly valve complete assembly for cell isolation	1 no. per unit	
vi	Tower Internals :		
	a) Water spray nozzle	One cell population	
	b)Fills (other than concrete fills)	One cell population	
	c) Drift eliminator	One cell population	
	d)Internal distribution pipes, end caps and couplings	One cell population	
vii	C.T. Fan drive motor	1 no.	
viii	C.T. Fan drive motor bearing	1 set of each type	
ix	Fan drive coupling set or V belts	1 set per unit	
x	Oil seal (each type)	1 set per unit	
5	Compressed Air System		
i	HP assembly	1Set of each type	
ii	LP assembly	1 set of each type	
iii	Suction valve assly	4 set of each type	
iv	Discharge valve assly.	4 set of each type	
v	Motor	1 no. of each type	
vi	Oil pump assly	1 set of each type	
vii	Valves of cooling water system	1 set of each type	
viii	Bearing for compressor	1 set of each type	
ix	Piston HP	1 set of each type	
x	Piston LP	1 set of each type	
xi	Crank shaft assy	1 set of each type	
xii	Connecting rod	1 set of each type	
xiii	Piston Ring, Guide Ring	1 set of each type	
xiv	Pnuematic valves of different size for compressed air line	10 set of each type	
xv	Oil Filter	1 set of each type	
xvi	Bearing	1 set of each type	
xvii	Suction air filter	1 set of each type	

6	HVAC System		
i	Suction filter of AHUs	1 set for each type	
ii	Heapa/MICRO FILTER	1 Set for each type	
iii	AHU Blower & Motor	1 Set each type	
iv	Refrigerant pump with motor for VAM	1 Set for each type	
v	Absorbent pump with motor for VAM	1 Set for each type	
vi	Suction valve assembly for compressor	2 set for each type	
vii	Discharge valve assembly for compressor	2 set for each type	
viii	Bearing for compressor	1 set for each type	
ix	Piston HP	1 set for each type	
x	Piston LP	1 set for each type	
xi	Motor for compressor	1 no. for each type	
xii	V belts	1 set of each type	
xiii	Steam pressure control valve in VAM	1 no. for each type	
xiv	CT fills for HVAC system	1 set for 1 CT population	
xv	HVAC CT gear box internal gear set	1 set for each type	
xvi	HVAC CT gear box bearing	1set for each type	
xvii	Lithium Bromide	1 fill	
xviii	Freon/equivalent Gas	1 fill for a compressor	
7	Ash Handling Plant		
i	Clinker grinder/slag crusher assembly including its motor	1 set for units having 100% SC	
		2 sets for units having 50% SC	
ii	Grinding Rolls of Clinker grinder/slag crusher	1 set per unit having 100% SC	
		2 sets per unit having 50% SC	
iii	Bearings with plumber blocks of Clinker grinder/ slag crusher	1 set per unit having 100% SC	
		2 sets per unit having 50% SC	
iv	Gear Box for clinker grinder/ slag crusher	1 sets for unit having 100% SC	
		2 sets for unit having 50% SC	

v	Internals including gear set, bearings of Gear Box for clinker grinder/ slag crusher	2 set for unit having 100% SC	
		4 sets for unit having 50% SC	
vi	Scrapper Conveyor chain	2 set for unit having 100% SC	
		4 sets for unit having 50% SC	
vii	Scrapper bars complete with fixing lugs, guide pulley assembly with shaft, bearings etc ,drive end	1 set for units having 100% SC	
	sprockets, sprocket segments	2 sets for units having 50% SC	
viii	Bottom ash hopper cooling pipe fittings, inspection/manhole glasses and nozzles for all hoppers of one unit	1 set	
ix	Fluid coupling for SSC/clinker grinder	2 set of each type	
x	Screw conveyor assembly	1 set	
xi	Flights for Screw Conveyor	2 sets	
xii	Bottom ash transfer pump assembly with motor	2 sets	
xiii	Jet pump assembly	1 sets per unit	
xiv	Ash slurry disposal pump assembly complete	One set of each type	
xv	Fluid coupling with scoop control for Ash slurry disposal pump	1 set of each type	
xvi	Gear box for Ash slurry disposal pump	1 set of each type	
xvii	Internals of gear box	1 set of each type	
xviii	V-belt	2 sets of each type	
xix	Impellers, Liners (Volute & suction / discharge)	One set of each type	
xx	Pump Bearings, sleeves, bearing housing	2 sets of each type	
xxi	Seal water pump assembly including its motor	1 set for each type	
xxii	Ash water pump assembly including its motor	1 set for each type	
xxiii	Ash water pump bowl assembly & bearing housing assy (for vertical pumps) or rotating assy with bearings (for horizontal pump)	1 set for each type	

xxiv	Vacuum pump assembly including its motor	1 set per unit	
xxv	Ash water line valves (above 100 NB)	2 nos of each type	
xxvi	Ash Slurry line valves	2 nos of each type (knife valve) 1 nos of each type (plug valve)	
xxvii	Ash feed valves below ESP hoppers	10% of total population	
xxviii	ESP hoppers & buffer hoppers level indicators (High &Low)	10% of total population	
xxix	Fly ash isolation valves (Each type)	10% of total population	
xxx	Jetting nozzles (each type) for ash handling applications such as flushing box, sluice trench, wetting head, air washer unit etc	10% of total population	
xxxi	Fly ash conveying line couplings(each type)	10% of total population	
xxxii	Bag filters (for buffer hoppers & Silos)	1 set of each type	
xxxiii	Ash slurry disposal pipe couplings(each type)	10 % of total population	
xxxiv	Fly ash pneumatic valves (each type)	5 % of total population	
xxxv	Ash Slurry Pipelines	10 % of each type of total population	
xxxvi	Refractory	10 MT	
8	ELECTRICAL		
8.1	Spares For 400 KV/220 KV/132 KV Switchyard Equipment		
A	Circuit Breakers		
i	One complete pole of circuit breaker along with terminal connectors	1	
ii	One Complete breaker, 3 Poles along with drive unit, marshalling box & terminal connectors	1 no.	
iii	Relays, power contactors, switch-fuses for electrical control circuit (one set consisting of one no. each of all types for one circuit breaker)	1 set	
iv	Set of gaskets, rings & seals	1 set	
v	Molecular filter for Circuit breaker	1 set	
vi	Insulating nozzle	1 Nos.	

vii	Circuit breakers support insulator stack	1 set	
viii	Tripping and closing coil (one set consisting of one no. each of all types)	3 sets	
ix	Density monitoring system for ckt. Bkr.	1 sets.	
x	Spring charging motors (if applicable)	1 no.	
xi	Set of Valves for pneumatically operated circuit breaker	1 set	
xii	Pressure switch set for pneumatically operated circuit breaker	1 set	
xiii	Fixed and moving arcing contact	1 sets	
xiv	Circuit breakers terminal connectors (one set means one no. of each type and rating)	1 set	
xv	SF6 Gas filling Valve (DILO)	1 no.	
xvi	SF6 gas	3 Cylinders	
B	Isolators		
i	One complete pole of HCB isolator with 2 E/S along with operating mechanisms, etc.(without Structure)	1no	
ii	One complete pole of Pantograph isolator along with operating mechanisms, etc.(without Structure)If applicable	1no.	
iii	Copper contact fingers for female contacts	6 nos.	
iv	Relay, power contactors, switch fuses for electrical control circuit (one no. of each type and rating for one isolator)	1 set	
v	Support insulator stack for one pole of HCB isolator	1 no.	
vi	Rotary bearings for isolator	3 nos.	
vii	Limit switch & aux. Switch	6 nos.	
viii	Isolator terminal connectors(one set means one no. of each type and rating)	1 set	
C	Current Transformer Complete In All Respects Including Terminal Connectors .	3 no.	
D	Capacitor Voltage Transformer Complete In All Respects Including Terminal Connectors .	3 no.	

E	Surge Arrester Complete In All Respects Including Terminal Connector And With Surge Counter And Lead.	3 no.	
8.2	Spares For 765 KV Switchyard Equipment		
A	Circuit Breakers		
i	Complete three pole circuit breaker without closing resistor with support structure, interrupting chamber, pole column, operating mechanism, controlled switching, terminal connector etc.	1 No.	
ii	Complete three pole circuit breaker with closing resistor, interrupting chamber, pole column, operating mechanism (without support structure)	2 Nos.	
iii	Relays, power contactors, switch-fuses for electrical control circuit (consisting of one no. each of all types and ratings)	2 sets	
iv	Set of gaskets, rings and seals.	3 sets	
v	molecular filter for circuit breakers	6 sets	
vi	Insulating nozzle	1 Nos.	
vii	Tripping and closing coil(each type)	12 Nos.	
viii	Density monitoring system for circuit breakers	2 Nos.	
ix	Spring charging motors(if applicable)	6 Nos.	
x	Fixed and moving arcing contact	1 sets	
xi	Terminal connector(of each type)	3 Nos.	
xii	SF6 Gas filling Valve (DILO)	1 no.	
xiii	SF6 gas	3 Cylinders	
B	Isolators		
i	Complete three phase isolator with one E/S with insulator along with operating mechanism, terminal connector etc. (without support structure)	1 No.	
ii	Complete arm assembly for isolator	1 No.	
iii	Relays, power contactors, switch-fuses for electrical control circuit (one no. of each type and rating)	3 sets	
iv	Support insulator stack for one pole	1 Nos.	

v	Operating mechanism box for Isolator and E/S	1 Nos.	
vi	Rotary bearings for isolator	3 Nos.	
vii	Limit switch and auxiliary switch	9 Nos.	
viii	Terminal connectors	2 nos. of each type, make and model	
C	Current Transformer		
i	Complete in all respects including terminal connectors, common box etc.(excluding structure)	4 Nos.	
D	Capacitor Voltage Transformer		
i	Complete in all respects including terminal connectors, common box etc.(excluding structure)		
	(a) 4400 pF	3 Nos.	
	(b) 8800 pF	1 Nos.	
E	Surge Arrester		
i	Complete in all respects with surge counter etc. (excluding structure)	2 Nos.	
8.3	Spares For 765/400/220/132 KV Switchyard Equipments		
i	Double Tension string insulator assembly with double anchoring points with antifog type disc insulators per string with all hardware accessories including arcing horn and tension clamp set suitable for 'Twin Moose" ACSR conductor with sub-conductor spacing (sets)		
	a) with turn buckle		
	Insulator	1 set	
	Hardware	1 set	
	b) without turn buckle		
	Insulator	1 set	
	Hardware	1 set	
ii	Single Suspension String insulator assembly with antifog type disc insulators with all hardware accessories including arcing horn with		
	a) Drop clamp set suitable for twin "Moose" ACSR with sub conductor spacing (sets)		
	Insulator	2 set	
	Hardware	2 set	

	b) Through clamp set suitable for twin "Moose" ACSR with sub conductor spacing (sets)		
	Insulator	1 set	
	Hardware	1 set	
iii	Double Tension string insulator assembly with double anchoring points with antifog type disc insulators per string with all hardware accessories including arcing horn and tension clamp set, sag compensating spring suitable for Quad ACSR moose conductor		
	a) with turn buckle		
	Insulator	2 set	
	Hardware	2 set	
	b) without turn buckle		
	Insulator	2 set	
	Hardware	2 set	
iv	Buspost insulator clamp suitable for Al. Tube Rigid/sliding (Nos.)	2 Nos.	
v	Buspost insulator clamp suitable for Al. Tube to accommodate welding sleeve (nos.)	4 Nos.	
vi	Buspost insulator clamp suitable for Al. Tube Expansion type (Nos.)	1 No.	
vii	Buspost insulator clamp suitable for Twin Moose ACSR conductor. (Nos.)	1 No.	
viii	Interconnector for Al. Tube to twin moose ACSR conductor (nos.)	1 No.	
ix	Welding sleeves for Al. Tube (nos.)	10 Nos.	
x	TEE connector for ACSR moose twin to Quad Moose	6 nos.	
xi	PG clamp for Quad ACSR Moose	2 Nos.	
xii	T-clamp suitable for single ACSR Moose to single ACSR Moose (Nos.)	6 nos.	
xiii	PG clamp suitable for ACSR Moose to Moose (Nos.)	1 No.	
xiv	Spacers for 'Twin Moose' ACSR with sub-conductor spacing (Nos.) Flexible/Rigid	80 Nos.	
xv	Spacers for 'Quad' ACSR Moose conductor (Nos.) Flexible/Rigid	30 Nos.	

xvi	Earth wire tension clamps with D-Shackle assembly (Nos.)	2 Nos.	
xvii	T-clamp for GS earth wire of	2 Nos.	
xviii	Pad type compressive clamp for earth wire down conductor(Nos.)	2 Nos.	
xix	Corona bell to suit Al. Tube (nos.)	1 No.	
8.4	Spares For GIS		
A	Gas insulated switchgear		
i	SF6/XLPE cable terminations complete with gasket and connectors.	1 No.	
ii	Circuit breaker complete with operating mechanism, all necessary apparatus and preinsertion resistors etc. for line breakers.	1 No. of each type and rating	
iii	Disconnecting switch complete with operating mechanism & all necessary apparatus etc.	1 No. of each type and rating	
iv	Safety grounding switch complete with operating mechanism, all necessary connecting apparatus.	1 No.	
v	High speed fault making grounding switch complete with operating mechanism, and all necessary apparatus.	1 set	
vi	VT complete with all accessories of connectors etc.	1 No.	
vii	Current transformer	3 Nos. of each type & rating	
viii	Single phase SF6 gas insulated zinc oxide surge arresters	3 Nos.	
ix	Gas monitoring devices complete with all necessary accessories.	3 Nos. of each type & rating	
x	Control switches & control relays (One of each type and rating)	1 set	
xi	Control circuit fuses	10 % of total population	
xii	Pilot lamp bulbs	10 % of total population	
xiii	Closing coils for circuit breakers	3 Nos.	
xiv	Trip coils for circuit breakers	6 Nos.	
xv	Spare auxiliary contacts for disconnecting and safety grounding switches.	1 No. of each type	
xvi	MCBs	1 No. of each type & rating	

xvii	Semaphore	6 Nos.	
8.5	Spares For Control & Relay Panels		
A	Protective relays		
i	Numerical relays for Shunt reactors, Tie transformer, Generator, GT & UAT protection (one of each type)	1 set	
ii	Numerical distance protection relays for EHV line(one of each type)	1 set	
iii	Auto reclose relay	1 No.	
iv	Numerical breaker fail protection relay(in case of standalone)	1 No.	
v	High speed trip relays(one of each type and rating)	1 set	
vi	Trip circuit supervision relay (in case of standalone)	2 Nos.	
vii	Aux. Flag relays(one set means one of each type and rating)	2 set	
viii	Coupling relays(one of each type and rating)	2 set	
ix	Any other relay used in the scheme(one of each type and rating)	1 set	
x	Under frequency relays for islanding scheme	1 no.	
xi	Event logger modules(set means one module each of each type)	1 no.	
B	Indicating meters		
i	Voltmeter(one of each type and range)	1 no.	
ii	Ammeter(one of each type and range)	1 no.	
iii	MW meter(one of each type and range)	1 set	
iv	MVAR meter(one of each type and range)	1 set	
v	Voltage transducer suitable for voltmeter (one of each type and range)	1 set	
vi	Current transducer suitable for Ammeter (one of each type and range)	1 set	
vii	MW transducer suitable for (c) above) (one of each type and range)	1 set	

viii	MVAR transducer (suitable for (d) above) (one of each type and range)	1 set	
ix	Energy meter(ABT meter), class: 0.2	1 No.	
x	Energy meter (the type mounted in GRP)	1 No.	
xi	One card of each type and rating for line (in case standalone) and Generator disturbance recorder.	1 no.	
C	Others		
i	Control/ synchronizing switches (one set means one of each type and rating)	1 set	
ii	Semaphore indicators (one set means one of each type)	2 no.	
iii	Push buttons (One of each type)	1 set	
iv	Lamps & indicators (one set means one no. of each type)	1 set	
v	PTS switch	1 No.	
vi	Annunciation relay/ card	1 set	
vii	Synchronizing socket(as provided in the control panels)	1 No.	
viii	Aux. CTs & aux. PTs, if provided in the scheme(one set means one no. of each type and range)	1 set	
ix	Engineering workstation	1 No.	
x	Ethernet switch(in case standalone)	1 No.	
D	Substation automation system and generator protection (If applicable)		
i	Bay control unit(Complete with all units)	2 No.	
ii	Numerical relays comprising various bay protection units	1 No. of each type	
iii	Generator protection relays(Numerical)	1 No. of each type	
iv	Interface relays used in the system	1 no. of each type	
v	Operator Work station(OWS) alongwith software, monitor, mouse, keyboard etc.	1 No.	
vi	Complete network Controller/ Server alongwith software	1 No.	
vii	Complete programming station along with software, monitor etc.	1 No.	
viii	Hard disks for OWS	1 No.	

ix	Hard disk for network Controller/ Server (if applicable)	1 No.	
x	Lamps/LEDS used in the system	10% of total quantity	
xi	Power supply modules used in the system	2 Nos. of each type	
xii	LAN switches(if included in main package)	1 No. of each type	
xiii	Media cleaning solutions	2 Bottles	
xiv	Fuses	100% of each type & rating	
xv	Terminal blocks	2 Nos. of each type, make model and rating	
xvi	Interface cables containing standard length of each type of cable and its connectors for each type of peripheral	2 sets	
xvii	MCBs	50% of each type, make and model	
xviii	Relays other than Numerical relays	1 No. of each type	
8.6	Spares For GT/ICTS/ST/UAT		
i	HV Bushing with metal parts and gaskets	3 Nos.	
ii	LV Bushing with metal parts and gaskets	3 Nos.	
iii	Neutral Bushing with metal parts and gaskets	2 Nos.	
iv	WTI with contacts	1 No.	
v	OTI with contacts	1 No.	
vi	Pressure relief device	1 No.	
vii	Magnetic oil gauge	1 No.	
viii	Buchholz relay complete	1 No.	
ix	Oil surge relay	1 No.	
x	Oil flow meter	1 No.	
xi	Set of gaskets	1 Set	
xii	Set of valves	1 Set	
xiii	Cooler fan with motor	2 Nos.	
xiv	Oil pump with motor	2 Nos.	
xv	Air cell for conservator	1 No.	
xvi	Set of OLTC contacts	1 Set	
xvii	Transformer oil	One fill for transformer of highest capacity(volume)	

8.7	Spares For Any Misc. Service Transformer		
i	HV Bushing with metal parts and gaskets	1 No. of each rating	
ii	LV Bushing with metal parts and gaskets	1 No. of each rating	
iii	Neutral Bushing with metal parts and gaskets	1 No. of each rating	
iv	WTI with contacts	1 No.	
v	OTI with contacts	1 No.	
vi	Pressure relief device	1 No.	
vii	Magnetic oil gauge	1 No.	
viii	Buchholz relay complete	1 No.	
ix	Set of gaskets	1 Set	
x	Set of valves	1 Set	
xi	Air cell for conservator (If applicable)	1 No.	
8.8	Spares For Dry Type Transformer		
i	HV Bushing	1 No.	
ii	LV Bushing	1 No.	
iii	Neutral Bushing	1 No.	
iv	Complete winding limb (HV and LV)	1 No.	
v	WTI (If applicable)	1 No.	
vi	Set of Thermistors /RTD with associated leads complete for one Transformer	1 No.	
8.9	Spares For Shunt Reactor		
i	HV Bushing with metal parts and gaskets	1 No.	
ii	Neutral Bushing with metal parts and gaskets	1 No.	
iii	WTI with contacts	1 No.	
iv	OTI with contacts	1 No.	
v	Pressure relief device	1 No.	
vi	Magnetic oil gauge	1 No.	
vii	Buchholz relay complete	1 No.	
viii	Set of gaskets	1 Set	
ix	Set of valves	1 Set	
8.10	Spares for Neutral Grounding Reactor		
i	Main Bushing with metal parts and gaskets	1 No.	

ii	Neutral Bushing with metal parts and gaskets	1 No.	
iii	OTI with contacts	1 No.	
iv	Pressure relief device	1 No.	
v	Oil level gauge	1 No.	
vi	Buchholz relay complete	1 No.	
vii	Set of gaskets	1 Set	
8.11	Spares for 200 MW/500 MW/660 MW unit SG		
A	VFD system		
i	Variable Frequency Drive Assly	1 set	
ii	Electronic cards		
	(a) Control modules	1 nos. of each type & rating	
	(b) I/O module	1 nos. of each type & rating	
	(c) Power supply modules	1 nos. of each type & rating	
	(d) Thyristor gate module including gate transformer	100% of one channel	
	(e) Exciter module	1 no.	
iii	Thyristor bridge leg	1 no.(Qty. for one ph.)	
iv	Over voltage limiter and surge suppressor network	1 set	
v	Semi conductor fuses for thyristor	1 set	
vi	Power & Control fuse	25% of installed quantity	
vii	Control Transformer	1 nos. of each type & rating	
viii	Contact/Breaker	1 no.	
ix	CT/VT	1 nos. of each type & rating	
x	Indicating lamps	100% of each type & rating	
xi	Auxiliary contactors & relays	1 no. of each type & rating	
xii	Panel mounted meters	1 no. of each type & rating	
xiii	Panel mounted printer	1 no.	
xiv	Indicating lamp holder full set	15% of each type and colour	
xv	Parameter Tuning device	1 no.	
B	VFD transformer		
i	VFD Transformer, one of each type and rating	1 set	

ii	Bushings with metal parts and gaskets		
	(a) Primary	1 no. each rating	
	(b) Secondary	1 no. each rating	
iii	Winding temperature indicator with alarm & trip contacts	1 no.	
iv	Oil temperature indicator with alarm & trip contacts	1 no.	
v	Magnetic oil level gauge	1 no.	
vi	Pressure relief device	1 no.	
vii	Diaphragm for explosion vent	1 no.	
viii	Buchholz relay/sudden pressure relay	1 no.	
ix	Silca gel charge	1 no.	
x	Set of gaskets	1 set	
xi	Contacts tap changer	1 set	
xii	Set of valves (1 no. of each size)	1 set	
xiii	Pressure gauge (applicable for sealed tank)	1 no. each type	
C	L.T. MCCs (SB MCC)		
i	Instrument Transformers		
	(a) Current transformers	1 no. of each type & rating	
	(b) Voltage transformers	1 no. of each type & rating	
ii	Meters		
	(a) Ammeters	1 no. of each type & range	
	(b) Voltmeters	1 no. of each type & range	
iii	Relays (Protection, aux. relays, Interposing relays, overload relays & timer etc.)	1 no. of each type	
iv	(a) Contactors and auxiliary power controller.	3 no. of each type & rating	
	(b) Coil for the above	3 nos	
	(c) Main & auxiliary contacts for the above	3 sets	
v	Air breaker switches	2 nos. of each rating	
vi	Control switch and selector switches	1 nos. of each type & rating	
vii	(a) Indicating lamps	5% of installed capacity	
	(b) Indicating lamp covers of different colours, lamp resistors & holders.	5% of installed capacity	

viii	Primary disconnect (Power) for MCC Module complete set	1 no. of each rating	
ix	Push buttons of various colours	5% each type & colour.	
x	Maintenance tools and accessories for maintenance	2 nos.	
xi	Control supply transformers	1 no. of each rating	
D	Electrostatic precipitator (ESP)		
i	Support insulator	4 nos.	
ii	Shaft insulator	6 nos.	
iii	Emitting electrodes		
	(a) Helical wire type	5% of the installed quantity in one ESP	
	(b) Wire pipe in rigid frame	10% of the installed quantity in one ESP	
	(c) Mast type	2% of the installed quantity in one ESP	
iv	Collecting electrode	2% of the installed quantity in one ESP	
v	Inner arm assembly	20 nos. each for collecting & emitting system.	
vi	Outer arm assembly	10 nos. each for collecting & emitting system.	
vii	Plain bearing	20 nos. of each type & size.	
viii	Shock bar/anvil	20 nos. of each type & size.	
ix	Rappers		
	(a) For electric rappers		
	(i) Assembled rapper/drop rods	20 nos. of each type & size.	
	(ii) Coil assembly along with sleeve	4 nos.	
	(iii) Casing	4 nos.	
	(iv) Gaskets & packing	10 nos. of each type & size.	
	(b) For tumbling rappers		
	(i) Hammers	20 nos. of each type & size.	
	(ii) Bearing components	4 nos.	
	(iii) Shafts	4 nos.	
	(iv) Gear motors	4 nos.	
x	Transformer rectifier set		

	(a) Transformer rectifier set (Complete)	2 no.	
	(b) High voltage insulator	2 no.	
xi	Gaskets(One set means one complete replacement for one TR sets, one ESP)	1 set	
xii	Control system		
	(a) Transformer-rectifier set controller	1 no.	
	(b) Rapper controller complete	1 no.	
	(c) Communication controller complete	1 no.	
	(d) Electronic cards:		
	(i) For rapper controller & ESP management system	1 set	
	(ii) For transformer rectifier controller	1 set	
	(e) Display unit	1 no. of each type	
	(f) Keyboard	1 no. of each type	
	(g) Push buttons for		
	(i) TR set controller	2 sets	
	(ii) Others	1 set	
	(h) Indicator lamps	1 set	
	(i) Control fuse	25% of installed quantity	
	(j) Power fuse	25% of installed quantity	
	(k) Thyristor fuse	1 set	
	(l) Thyristor of transformer controller rectifier	2 sets	
	(m) Auxiliary Control Panel (ACP) *		
	(i) Breaker	1 no.	
	(ii) Power contacts	1 set	
	(iii) Auxiliary relays	1 set	
	(iv) Over load relay	1 set	
	(v) Power fuse	1 set	
	(vi) Control fuse	1 set	
	(vii) Control terminal block	1 set	
E	ID Fan		
i	ID fan motor	1 no.	
ii	ID fan motor bearings	1 set	
F	ID Fan lube oil system		
i	Pump motor and bearing.	1 no. of each type & rating	

G	FD Fan		
i	FD fan motor	1 no.	
ii	FD fan motor bearings	1 set	
H	FD Fan lube oil system		
i	Pump motor and bearing.	1 no. of each type & rating	
I	PA Fan		
i	PA fan motor	1 no.	
ii	PA fan motor bearings	1 set	
J	PA Fan lube oil system		
i	Pump motor and bearing.	1 no. of each type & rating	
K	Seal air fan		
i	Seal air fan motor	1 no.	
ii	Motor bearing	1 set	
L	Mill motor and APH motor		
i	Mill (pulveriser) motor	1 no.	
ii	Pulverisers motor bearing	1 set	
iii	Pulveriser lube oil motor and bearing	2 nos.	
M	Air pre heater motor	1 no.	
i	Air motor and bearing	1 no.	
ii	APH lube oil motor and bearing	1 no.	
iii	Scanner motor and bearing.	1 no.	
iv	Actuators	One of each type	
v	Actuators for Atomizing steam presurre reducing valve and Heavy oil temperature control valves.	One of each type	
N	Soot blowers		
i	Motor for water wall deslagers and motor bearing	One of each type	
ii	Motor for long travel retractable soot blower and motor bearing	1 No.	
iii	Complete motor for air preheater soot blower and motor bearing	1 No.	
iv	Complete power pack assembly for Long Retractable soot blower	(One no. for rotrary + One no. for transverse)	
v	Spare set of rotary & transverse chain for long retractable soot blowers (for dual motor type)	One of each type & size	
O	Electrical actuators		
i	Actuators and actuator bearings	One of each type & size	

ii	Power unit for modulating actuator	One of each type & size	
iii	DC-DC unit/power pack units	One of each type & size	
iv	Electronic cards	1 set	
v	Position feed back transmitters	One of each type & size	
vi	Control unit	1 no.	
vii	Torque and limit switch assembly of each unit	1 no.	
8.12	Spares for 200/500/660 MW Unit TG		
A	Generator & auxiliaries		
i	Gaskets/ O rings/ Cords of all types (one set should include all types and sizes of gaskets for one generator, hydrogen seals for TG and EE hydrogen coolers)	1 set	
ii	(a) Insulating packer below slot wedges.	10% of the installed quantity	
	(b) Ripple springs	10% of the installed quantity	
	(c) Insulating material below the retaining rings		
	(i) Liners	1 set	
	(ii) Coil spacers	1 set	
iii	(a) Generator bearings for TE and EE 1set (complete with torous, intermediate pieces and all other fixing/assembly/ insulating material required to complete one TG unit except housing)	1 set	
iv	Oil guard rings spare for TE and EE bearings	1 set	
v	Stator winding bars and connections (one set comprising of two bars of each variant) not applicable for VPI machine or machine with moulded overhang.	1 set	
vi	Generator Rotor fan/ compressor blades (Fixed blades & moving blades)	1 set	
vii	Slot wedges	10% of the installed quantity	
viii	Hydrogen Seal Assly(O ring,gaskets,insulating sleeves, bush)	1 set	

ix	Tube nest for Hydrogen cooler/stator cooler/Seal oil cooler/exciter cooler	1 no. of each type	
x	Hydrogen seals rings TE, EE	1 set each	
xi	Teflon Hoses with connectors (for stator water cooling system)	3 nos. of each type.	
xii	NGT for Generator	1 No.	
xiii	Generator phase and neutral bushings complete for one machine	1 set	
xiv	Brush- holder assembly with housing for exciter for rotor winding E/F sensing (if applicable)	1 set	
xv	Brush- holder for exciter for rotor winding E/F sensing (if applicable) for one machine	1 set	
xvi	Slip ring assembly complete	1 set	
xvii	Oil catcher fins	1 set of each type	
xviii	Nut and bolts for generator	25% of total population of each type	
xix	CC bolts assembly	1 set of each type	
xx	CC bolts washer	2 sets	
xxi	Insulating sleeves and washer	25% of total population of each type	
xxii	Brush holder with brushes for slip ring (if applicable)	Min. 2 sets	
xxiii	Brush- holder assembly for shaft earthing	2 nos.	
xxiv	Brushless Excitation system (if applicable)		
	(a) Relays	1 no. of each type	
	(b) Electronic modules of automatic voltage regulator	1 no. of each type	
	(c) Control transformer of each type/rating	1 set	
	(d) Rotating Diode assembly with heat sinks, RC network and fuses	25% of one unit	
	(e) Thyristor assembly with semiconductor fuses	100% for one channel	
	(f) DC field breaker	1 no.	
	(g) Over voltage suppressor (Thyristor based)	1 set	
xxv	Static excitation system (if applicable)		
	(a) Static rectifier element with heat sink and fuse assembly	100% of one bridge	

	(b) Relays	1 no. of each type	
	(c) Electronic modules of automatic voltage regulator	1 no. of each type	
	(d) Excitation Transformer	1 no.	
	(e) Shunt trip and closing coil for field circuit breaker	2 set	
	(f) Initial excitation diode	2 set	
	(g) Thyristor cooling fan	1 set complete for one unit	
	(h) Complete DC field breaker	1 no.	
	(i) Field flashing breaker	1 no.	
	(j) Over voltage suppressor	1 set	
	(k) Control transformers of each type/rating	1 set	
B	Gas system		
i	Diaphragm valve	1 no. of each type	
ii	Gas valves of all type & sizes	1 no. of each type & size	
iii	Valves for H ₂ & CO ₂ manifolds	10 nos.	
iv	Safety valve	1 no.	
v	H ₂ gas regulator from cylinder to manifold	10 nos.	
vi	CO ₂ gas regulator from cylinder to manifold	3 nos.	
vii	Bearings & seals for fan and gas drier	1 set	
viii	Thermostat for gas drier	1 no.	
ix	Compressor for refrigerant type drier	1 set	
x	Thermometers	1 no. of each type & range	
xi	Filter for gas analyser	2 sets	
C	Seal oil system		
i	Complete motor and Pump assembly for AC seal oil pump	1 no. of each type	
ii	Motor pump set for DC seal oil pump	1 set	
iii	Pump and motor bearings	1 set	
iv	Vacuum pump spares (1 set bearing rotor with shaft, gas ballast valve gaskets. 'O' rings, felt filters, other filter elements)	1 set	
v	Vacuum pump assembly	1 set	
vi	Differential pressure regulator	1 no.	
vii	Pressure equalizing valve (if applicable)	1 no.	

viii	Non-return shut off valves	1 set	
ix	Float valve	1 no. of each type	
x	Non-return valve	1 no. of each type	
xi	Filter elements	1 no.	
xii	Vacuum pressure gauge	1 no. (if applicable)	
xiii	Differential pressure gauge	1 nos.	
xiv	Bellow for differential pressure regulator	1 no. of each type	
D	Stator water cooling system		
i	Stator water pump motor assly	1 set	
ii	Float for level regulator	1 no. (if applicable)	
iii	Filter elements	1 set	
iv	S.S. 3 way cock	1 no.	
v	Specific resistance measuring	1 no.	
vi	Insulators for stator water header	1 set	
E	EOT crane for turbine hall		
i	Solenoid Coils for Brakes	2 sets	
ii	MCBs/MCCBS/Fuse links for the whole crane	1 set	
iii	Contactors and overload Relays	1 set of each type, size & rating	
iv	Motors of the EOT	1 set of each type, size & rating	
v	Timers of each type, size & rating	1 set	
vi	Limit Switches for		
	(a) Main Hoist	1 set	
	(b) Aux. Hoist	1 set	
	(c) Cross Traverse	1 set	
	(d) Long Travel	1 set	
vii	Carbon brushes & brush holders	1 set	
viii	Master Controller for Aux. Hoist,	1 set	
ix	Resistance Box	1 No of each type.	
F	EOT crane for turbine hall (VFD drive)		
i	Solenoid Coils for Brakes	2 sets	
ii	MCBs/MCCBS/Fuse links for the whole crane	1 set	
iii	Contactos and overload Relays for Motors of the EOT	1 set of each type, size & rating	
iv	Timers of each type, size & rating	1 set	
v	Limit Switches for		
	(a) Main Hoist	1 set	
	(b) Aux. Hoist	1 set	

	(c) Cross Traverse	1 set	
	(d) Long Travel	1 set	
vi	Master Controller for Aux. Hoist	1 set each	
vii	Drive for MH,AH,CT<	1 no. of each type & rating	
G	Hydrogen generation plant		
i	Motor for compressor	1 no	
H	Motors		
i	Condensate Extraction Pump motor and motor bearing	1 no.	
ii	Boiler Feed Pump motor (BFP) and motor bearing	1 no.	
iii	ACW Pumps and DMCW Pumps motor and motor bearing	1 no. each	
iv	DM Water Regeneration Pumps motor and motor bearing	1 no.	
v	Alkali Transfer cum Recirculation Pump motor and motor bearing	1 no.	
vi	Waste recirculation cum Disposal Pumps motor and motor bearing	1 no.	
vii	DC Motor and motor bearing	1 no of each type	
viii	Acid Unloading Pumps (if included in scope) and motor bearing	1 no.	
ix	AC AOP motor for main turbine and motor bearing	1 no.	
x	AC AOP motor for TDBFP and motor bearing	1 no.	
xi	AC JOP motor for main turbine and motor bearing	1 no.	
xii	AC JOP motor for TDBFP and motor bearing	1 no.	
xiii	MDBFP lub oil pump motor and motor bearing	1 no.	
xiv	Vacuum pump motor and motor bearing	1 no.	
8.13	Spares For GCB		
i	Fixed arcing contact	1 no.	
ii	Moving arcing contact with contact base	1 no.	
iii	Fixed load contact	1 no.	
iv	Moving load contact	1 no.	
v	Operating mechanism rod/shaft	1 no.	
vi	Closing coil	3 nos.	
vii	Tripping coil	3 nos.	
viii	Closing spring (if applicable)	1 no.	

ix	Tripping spring (if applicable)	1 no.	
x	Circuit breaker auxiliary contacts	1 no.	
xi	Gaskets	1 set for a breaker	
xii	Limit switches	1 set for a breaker	
xiii	Guide for moving contact set	1 no.	
xiv	Support insulators	1 no.	
xv	Bus seal off bushings	1 set for a breaker	
xvi	Upper and lower terminals with finger contact device	1 set upper & 1 set lower	
xvii	Arc extinction coil	2 nos.	
xviii	Current transformers protection	3 nos. of each type	
xix	SF6 cylinders	3 nos.	
xx	Auxiliary switches	2 sets	
xxi	Complete pole assembly (along with internally mounted equipment)	1 no.	
xxii	Drive assembly complete for GCB	1 set	
xxiii	In case of SF6 GCB		
	(a) Gas density switch	1 no.	
	(b) Gas pressure guage	1 no.	
	(c) Gas density indicator	1 no.	
	(d) Absorbent	3 nos.	
	(e) Teflon hoses for one replacement in all the six poles of breakers	1 set	
8.14	Spares For Busduct		
A	Generator bus duct		
i	Bus support insulator	40 Nos.	
ii	Flexible equipment terminal connector complete with hardware complete for one machine (for three phases/neutral)		
	(a) Generator	1 Set	
	(b) Generator transformers	1 Set	
	(c) Unit transformers	1 Set	
	(d) PT & SP cubicle tap off	1 Set	
iii	Seal off bushings suitable for		
	(a) Main run	3 Nos.	
	(b) Tap off run	3 Nos.	
iv	Rubber belows		
	(a) Main run	1 Nos.	
	(b) Delta run	1 Nos.	
	(c) Tap off run	1 Nos.	

v	Current trans formers		
	(a) Main run CTs of each type & rating	3 Nos.	
	(b) Tap-off run CTs of each type & rating	3 Nos.	
vi	VT & SP Cubicles		
	(a) Lightning arrestor	3 Nos.	
	(b) VT for metering & protection	3 Nos.	
	(c) VT for AVR/EHG/Syn.	3 Nos.	
	(d) VT for performance test, EHG and AVR system	3 Nos.	
	(e) Surge capacitor	3 No.	
B	11 kV Busduct		
i	Support insulators	25 Nos.	
ii	Three phase set of flexible terminal connectors for switchgear end of each type & rating	1 set	
iii	Three phase set of flexible terminal connector for transformer end of each type & rating	1 set	
iv	Seal off bushings of each type & rating	3 nos.	
C	6.6 kV Busduct		
i	Support insulators	25 Nos.	
ii	Three phase set of flexible terminal connectors for switchgear end of each type & rating	1 set	
iii	Three phase set of flexible terminal connector for transformer end of each type & rating	1 set	
iv	Seal off bushings of each type & rating	3 nos.	
D	3.3 kV Busduct		
i	Support insulators	25 Nos.	
ii	Three phase set of flexible terminal connectors for switchgear end of each type & rating	1 set	
iii	Three phase set of flexible terminal connector for transformer end of each type & rating	1 set	
iv	Seal off bushings of each type & rating	3 nos.	
8.15	Spares For 33 KV/11KV/6.6KV/3.3KV Switchgears		
A	33 KV switchgears		

i	Breaker of each rating	1 no. breaker of each type and rating	
ii	Spring charging motor complete	2 Nos. of each type.	
iii	Shunt trip coil	2 Nos. of each type & rating	
iv	Closing coils	2 Nos. of each type & rating	
v	Current transformer of each type & ratio	1 Nos. of each type	
vi	Potential transformer of each type & ratio	1 Nos. of each type	
vii	Numerical relays	1 no. of each type	
viii	Aux. Relays/ Lock out relays/ Timers	2 Nos. of each type	
ix	Moving contact assembly of each rating	1 set	
x	Stationary (fixed contact of each rating.	1 set	
xi	Bus seal off bushings	3 nos. of each type & size	
xii	Bus bar support insulators	3 Nos.	
xiii	Limit switches	6 Nos.	
xiv	Closing spring	1 Nos. of each type	
xv	Tripping spring	1 Nos. of each type	
xvi	Control switches	2 Nos. of each type	
xvii	Selector switches	2 Nos. of each type	
xviii	Isolation switch for the control supply	2 Nos.	
xix	operating mechanism rod for each rating	1 set	
xx	Energy meter of each type & range	1 Nos. of each type	
xxi	Circuit breaker auxiliary contact assembly	2 Nos. of each type & rating	
xxii	Indicating lamps with holders	10 set	
xxiii	Fuse base and holder	10 Nos.	
xxiv	Fuse link	10 Nos.	
xxv	Isolating contact (fixed & moving) (one set means male & female contacts of one complete breaker)	1 set of each rating	
xxvi	Terminal blocks	2 Nos.	
xxvii	SF6 cylinder with SF6 gas filled alongwith nozzle for filling the gas(if applicable)	1 No.	
xxviii	Multiple pin plug contact assy. with cables (male & female)	3 Nos.	

xxix	Guide for moving contact set(one set means complete replacement for one breaker)	1 set	
xxx	Interphase barrier	2 Nos. of each type	
xxxi	Pressure gauge (for SF6 breakers)	2 Nos.	
B	11 KV/6.6 KV/3.3KV switchgears		
i	Breaker of each rating	1 no.	
ii	Spring charging motor complete	2 Nos. of each type.	
iii	Shunt trip coil	5 Nos. of each type & rating	
iv	Closing coils	5 Nos. of each type & rating	
v	Current transformer of each type & ratio	3 Nos. of each type	
vi	Potential transformer of each type & ratio	3 Nos. of each type	
vii	Numerical relays	2 Nos. of each type	
viii	Aux. Relays/ Lock out relays/ Timers(if applicable)	2 Nos. of each type	
ix	Moving contact assembly of each rating (One set means complete replacement for one breaker)	2 sets	
x	Stationary (fixed contact of each rating.(One set means complete replacement for one breaker)	2 sets	
xi	Bus seal off bushings	3 nos. of each type & size	
xii	Bus bar support insulators	12 Nos.	
xiii	Limit switches	10 Nos.	
xiv	Closing spring	1 set	
xv	Tripping spring	1 set	
xvi	Control switches	2 Nos. of each type	
xvii	Selector switches	2 Nos. of each type	
xviii	Isolation switch for the control supply	2 Nos.	
xix	operating mechanism rod for each rating	1 Nos.	
xx	Energy meter of each type & range	1 Nos. of each type	
xxi	Circuit breaker auxiliary contact assembly	6 Nos. of each type & rating	
xxii	Indicating lamps with holders	20 set	
xxiii	Fuse base and holder	12 Nos.	
xxiv	Fuse link	12 Nos.	
xxv	Isolating contact (fixed & moving)(one set means male & female contacts of one complete breaker)	4 sets of each rating	

xxvi	Terminal blocks	6 Nos.	
xxvii	SF6 cylinder with SF6 gas filled along with nozzle for filling the gas(if applicable)	3 Nos.	
xxviii	Multiple pin plug contact assy. with cables (male & female)	6 Nos.	
xxix	Guide for moving contact set(one set means complete replacement for one breaker)	1 set	
xxx	Interphase barrier	2 Nos. of each type	
xxxi	Pressure gauge (for SF6 breakers)	2 Nos.	
xxxii	Vacuum Contactors with HRC fuses	2 Sets (One set for three phases)	
xxxiii	Surge arresters	3 Nos.	
xxxiv	Modules for Data Concentrator & system LAN	1 No. module of each type	
8.16	Spares For 200/500/660 MW Units LT SWGR And LT Busduct		
i	Complete breaker	3 Nos. of each type & rating	
ii	Spring charging motors	3 Nos. of each type & rating	
iii	Aux. Contact set	6 sets of each type & rating	
iv	Limit switches	10 Nos.	
v	Arc chutes	4 Nos. of each type & rating	
vi	Fixed contact set	6 sets of each type & rating	
vii	Moving contact set	6 sets of each type & rating	
viii	Arcing contact	6 sets of each type	
ix	Charging spring	4 Nos. of each type & rating	
x	Current transformer	3 Nos. of each type & ratio	
xi	Closing coil	12 Nos. of each type & rating	
xii	Trip coil	12 Nos. of each type & rating	
xiii	CT for Bimetal O/L relays	3 Nos. of each type & rating	
xiv	Voltage transformer	3 Nos. of each type & ratio	
xv	Control supply transformer	3 Nos.of each type and rating	

xvi	Ammeter	2 Nos. of each type, size & range	
xvii	Voltmeter	2 Nos. of each type, size & range	
xviii	Relays	2 Nos. of each type	
xix	Power contactor	2 Nos. of each type & rating	
xx	Coil of above contactor	2 Nos. of each type & rating	
xxi	Air break switches	3 Nos. of each type & rating	
xxii	DP air break switches(DC)	3 Nos. of each type & rating	
xxiii	Control & selector switches	5 Nos. of each type & rating	
xxiv	Control fuses & neutral links	100 nos. of control fuses of each type and rating, 25 nos. of neutral links of each type & rating.	
xxv	Indicating lamps	10% of total installed population of each type & rating	
xxvi	Bus bar support insulators(Porcelain)	10 Nos.	
xxvii	Vertical bus bar dropper support insulators(FRP)	25 Nos.	
xxviii	Bus duct flexible connectors	1 set for three phases of each type & size	
xxix	(a) Primary disconnect in MCC(Bus bar end)(Male/female contact)	10% of total installed population of each type & rating	
xxx	(b) Secondary disconnect in MCC(Cable end)	10% of total installed population of each type &	
xxxi	Push buttons	15 Nos.	
xxxii	Power fuses of each type and rating	Min. 12 nos.	
xxxiii	Thermal Bimetal relays	10% of total installed population of each type & rating	
xxxiv	Current transducers	10% of total installed population of each type & rating	
xxxv	Voltage transducers	10% of total installed population of each type & rating	
xxxvi	Indication lamp holders complete	10% of each type & rating	

xxxvii	Busbar aluminium flat pieces	12 meters of each type & rating	
xxxviii	Busbar angles/formed pieces for breaker	2 Nos. of each type	
xxxix	Terminal blocks	12 Nos. of each type & rating	
8.17	Spares For Battery And Battery Charger		
A	Battery		
i	Complete dry cell	2% or 2 nos. whichever is more	
ii	Intercell connectors with hardware	10% or 5 nos. whichever is more	
iii	Vent plug	10% or 5 nos. whichever is more	
iv	Acid level indicating float (for opaque containers only)	10% or 5 nos. whichever is more	
v	Stand insulator	10% or 5 nos. whichever is more	
vi	Cell insulator	10% or 5 nos. whichever is more	
vii	Acid	10 Litres	
B	220 V battery charger		
i	ELECTRONIC CARD (all components mounted) Set of Cards and modules (Each type and rating: CPC Card, HV PFPSR card, Rectifier FFD card, DC under/over voltage relay card, ACOR card, DC output fuse FFD card, Earth leakage card, etc.)	1 set	
ii	Set of Auxiliary relays (Each type and rating: Auxiliary relays, 6 amp/ 110 V DC coil and 6 amp/240 V AC coil)	1 set	
iii	Set of fuse links and glass fuses(Each type and rating:AC input fuse links, 315 Amp,Rectifier fuse link, GS1000/400 Amp,Filter condenser fuse link, 160 Amp,DC output HRC fuse link, 500 Amp,Control HRC fuses links, 2 & 4 Amp & Glass fuse, 100 mA)	Min. 3 sets	
iv	Set of SCR and Diode (One of each type and rating)	3 set	
v	Rectifier transformer	1 no. of each type & rating	

vi	Control transformers	1 no. of each type & rating	
8.18	Spares For Service/ Passenger Elevator		
i	Friction block	2 Nos.	
ii	Guide roller of each type	20% of total population or 3 nos. of each type whichever is high	
iii	Contactors of each type	2No.	
iv	Control transformer	1 No. of each type	
v	Time device	2 No. of each type	
vi	Rectifiers	2 Nos. of each type	
vii	Over current relay	2 Nos. of each type	
viii	Auxiliary relays	3 Nos. of each type	
ix	Resistor	3 Nos. of each type	
x	Fuses of each rating	20% of the total population	
xi	Limit switches of each type	3 Nos.	
xii	Push button	3 Nos. of each type	
xiii	Contact device(if applicable)	3 Nos. of each type	
xiv	Brake motor	2 Nos. of each type	
xv	Transmitters	2 Nos. of each type	
xvi	Switches of each type	3 No.	
xvii	Receiver	2 Nos. of each type	
xviii	Bearings of each type & size	2 Nos.	
xix	Roller of each type	3 Nos.	
xx	Worm gear spares		
	(a) 'O' rings	3 sets	
	(b) Sealing ring of each type	3 sets	
xxi	Spares for brake		
	(a) Fan	2 Nos. of each type	
	(b) Magnetic coil	3 Nos. of each type	
	(c) Brake disc	2 sets	
	(d) Brake pad	2 sets	
xxii	Bushing (for door front)	2 sets	
xxiii	Pinion	2 nos. of each type	
8.19	Spares For DG Set(>1000KVA)		
i	Gaskets & packing	1 set	
ii	Valve springs	1 set	
iii	Fuel pump complete	1 set	
iv	Fuel nozzles and needles	1 set	

v	Piston, complete with rings and rod	1 set	
vi	Piston rings(for each engine)	1 set	
vii	Flow and temperature relay of each type used	1 set	
viii	Main and end bearing shells for the diesel engine	1 set	
ix	Generator bearing sheets	1 No.	
x	Rotor pole coil	1 No.	
xi	Battery charging rectifier diodes	4 Nos.	
xii	Complete rotating rectifier assembly for alternator	1 set	
xiii	Fuses for the excitation diodes	3 sets	
xiv	Automatic voltage regulator	1 set	
xv	Solenoid coil for each solenoid operated valve or relay used	2 each	
xvi	Instrument and indicator of each type used	1 each	
xvii	Alarm and signal lamps of each type used	10% of total population	
xviii	Cabinet lighting lamps(if applicable)	2 each	
xix	Bearing check kit	1 set	
xx	Shut down coil	1 No.	
xxi	Lub oil pressure relay	1 No.	
xxii	Filter screen	1 No.	
xxiii	'O' ring injector	1 set	
xxiv	'O' ring breather	1 set	
xxv	Magnetic pick up	1 No.	
xxvi	Actuator	1 set	
xxvii	Air cleaner	1 set	
xxviii	Belts(Fan belt)	1 set	
xxix	Hose bypass	1 No.	
xxx	Hose turbo oil supply	2 No.	
xxxi	Hose turbo oil drain	2 No.	
xxxii	Turbo repair kit	1 No.	
xxxiii	Over speed stop	No.	
xxxiv	Resistor for diesel generator	48 No.	
xxxv	Element lube oil filter for Diesel Engine	48 No.	
xxxvi	Element lube oil by-pass filter for Diesel Engine	24 No.	
xxxvii	Element fuel filter for Diesel Engine	24 No.	
xxxviii	Plate corr. Resistor for Diesel Engine	96 No.	

xxxix	Element air cleaner for Diesel engine	4 Nos.	
xl	Diodes forward for alternator	3 No.	
xli	Diodes reverse for alternator	3 No.	
xlii	HRC fuses links of various rating	3 Nos. of each type	
xliii	Ammeter 96x96mm, (0-200 amp) Accuracy class:1.0	1 No.	
xliv	A.C. Voltmeter 96x96 mm, (0-15 kV) Accuracy class:1.0	1 No.	
xlv	Ammeter selector switches	1 No.	
xlvi	Local/Remote selector switches	1 No.	
xlvii	Voltmeter selector switches	1 No.	
xlviii	Push button for trip circuit healthy test	1 No.	
xliv	White indication lamps for spring charged position	1 No.	
I	Alarm bell	1 No.	
li	Space heater along with control switch	1 No.	
lii	Trip circuit supervision relay	1 No.	
liii	Lube oil pump assembly/rotating assembly/impeller/shaft	1 set	
liv	Starting air motor	1 no.	
lv	Governing mechanism of DG set	1 no.	
8.20	Spares For DG Set (Upto 1000 KVA)		
i	Coil assembly 24 Volts	2 set	
ii	Solenoid coil for fuel oil system	2 No.	
iii	Complete rotating rectifier assembly for alternator	1 set	
iv	Voltage regulator complete	1 set	
v	Switches	1 No. of each type & rating	
vi	Power contactors	2 No. of each type & rating	
vii	Auxiliary contactors	1 No. of each type & rating	
viii	DC starter assembly with clutch engaging and disengaging arrangements complete with motor	1 No.	
ix	Coil for contactor(for both power and Auxiliary contactors)	2 No. of each type & rating	
x	Timer	1 No. of each type & rating	
xi	Auxiliary relays	1 No. of each type & rating	

xii	Current transformers	1 No. of each type	
xiii	Voltage transformers	1 No. of each type	
xiv	Battery charging rectifier diodes	4 Nos.	
xv	Fuses	6 No. of each type & rating	
xvi	Start/Stop push buttons	2 No. of each type & rating	
xvii	Indication lamps	20%	
xviii	Indication lamp holders	10%	
xix	On/Off isolator	1 No.	
8.21	Spares For PLCC Package		
i	Set of Cards/ Module (One of each type) for PLCC	1 set.	
ii	Set of Cards/ Module (One of each type) for Protection coupler	1 set.	
iii	Wave trap with Line matching Unit	1 no. of each type and rating	
8.22	Spares Unit Station Lighting & Cables		
A	Lamps		
i	100 W incandescent	2% or 2 nos. whichever is more	
ii	28 W fluorescent 'T5' type		
iii	70 W HPSV tubular		
iv	70 W HPSV elliptical		
v	150 W HPSV tubular		
vi	150 W HPSV elliptical		
vii	250 W HPSV tubular		
viii	250 W HPSV elliptical		
ix	400 W HPSV tubular		
x	400 W HPSV elliptical		
xi	125 W HPMV		
xii	1000 W halogen lamp		
B	Lighting fixture parts		
i	Fixture type-1B		
	(a) Front glass	5 Nos.	
	(b) Lamp holder	5 Nos.	
ii	Fixture type-1R		
	(a) Lamp holder	7 Nos.	
iii	Fixture type-1W		
	(a) Glass bowl	7 Nos.	
	(b) Lamp holder	15 Nos.	

iv	Fixture type FB,FC,FD,FI & FR1 (with electronic ballast)		
	(a) Electronic ballast (2x28 W) for T5 lamps	1% or 2 nos. whichever is more	
	(b) Lamp holders	100 Nos.	
	(c) Acrylic cover (fixture type FC)	5 Nos.	
	(d) Louvre (fixture type FD)	8 Nos.	
	(e) Louvre (fixture type FR1)	4 Nos.	
	(f) Louvre (fixture type FR2)	1 Nos.	
	(g) Acrylic cover (fixture type FH)	1 Nos.	
v	Fixture type SF1		
	(a) Front glass	2 Nos.	
	(b) Ballast	1% or 2 nos. whichever is more	
	(c) Lamp holder	4 Nos.	
vi	Fixture type SF2		
	(a) Front glass	2 Nos.	
	(b) Ballast	1% or 2 nos. whichever is more	
	(c) Lamp holder	2 Nos.	
vii	Fixture type SF3		
	(a) Front glass	2 Nos.	
	(b) Ballast	1% or 2 nos. whichever is more	
	(c) Lamp holder	2 Nos.	
viii	Fixture type SF4		
	(a) Front glass	3 Nos.	
	(b) Ballast	1% or 2 nos. whichever is more	
	(c) Lamp holder	3 Nos.	
ix	Fixture type SH1		
	(a) Ballast	1% or 2 nos. whichever is more	
	(b) Lamp holder	8 Nos.	
x	Fixture type SH2		
	(a) Ballast	1% or 2 nos. whichever is more	
	(b) Lamp holder	1 Nos.	
xi	Fixture type SH3		
	(a) Ballast	1% or 2 nos. whichever is more	
	(b) Lamp holder	3 Nos.	
xii	Fixture type SS1		
	(a) Glass bowl	3 Nos.	

	(b) Ballast	1% or 2 nos. whichever is more	
	(c) Lamp holder	3 Nos.	
xiii	Fixture type SS2		
	(a) Glass bowl	1 Nos.	
	(b) Ballast	1% or 2 nos. whichever is more	
	(c) Lamp holder	1 Nos.	
xiv	Fixture type SW1		
	(a) Glass bowl	75 Nos.	
	(b) Ballast	1% or 2 nos. whichever is more	
	(c) Lamp holder	75 Nos.	
xv	Fixture type SW2		
	(a) Glass bowl	10 Nos.	
	(b) Ballast	1% or 2 nos. whichever is more	
	(c) Lamp holder	10 Nos.	
xvi	Fixture type MP		
	(a) Glass bowl	1 Nos.	
	(b) Ballast	1% or 2 nos. whichever is more	
	(c) Lamp holder	1 Nos.	
xvii	Fixture type PF		
	(a) Front glass	1 Nos.	
	(b) Lamp	1 Nos.	
xviii	Fixture type HL		
	(a) Transformer	1 Nos.	
	(b) Lamps	1 Nos.	
	(c) Lamp holder	1 Nos.	
C	Lighting panels		
i	Synchronous timer 24 hrs.	3 Nos.	
D	Lighting control switch/receptacles		
i	20 Amp receptacles with plug	10 Nos.	
ii	20 Amp rotary switches	10 Nos.	
E	Junction boxes		
i	Type-F/FE 2-terminal strips	50 Nos.	
ii	JB type –S 4 way terminal block set	3 Nos.	
F	Power & control cables		
i	Terminating kits with all accessories and consumables	6 nos. of each type and rating used	

ii	Jointing kits with all accessories and consumables	6 nos. of each type and rating used	
iii	Power cable of highest rating for each voltage level	One drum length of each type & rating.	
iv	Control cable 17 corex2.5 sq. mm	One drum length	
v	Power cables lugs	12 nos.of each type & rating	
vi	Control cable lugs	100 nos. of each type	
8.23	Spares For Offsite Area		
A	Coal handling plant		
i	Primary crusher motor and motor bearings(if applicable)	1 set	
ii	Primary crusher lube oil motor and motor bearings	1 set	
iii	Secondary crusher motor and motor bearings	1 set	
iv	Secondary crusher lube oil motor and motor bearings	1 set	
v	Conveyer motors and motor bearings	One no. of each type and rating	
vi	Stacker reclaimers travel motor and motor bearings	1 set	
vii	Stacker reclaimers slew drive motor and motor bearings	1 set	
viii	Stacker reclaimers slew drive lube oil motor and motor bearings	1 set	
B	Ash handling plant		
i	Ash evacuation motor and motor bearings	One no. of each type and rating	
ii	Clinker grinder motor and motor bearings	One no. of each type and rating	
iii	Stepper conveyer motor and motor bearings	One no. of each type and rating	
C	Cooling tower		
i	Cooling tower motor and motor bearings	One no. of each type and rating	
D	Pre-treatment plant		
i	PT plant motor and motor bearings	One no. of each type and rating	
E	Primary and secondary air compressor room		
i	PAC motor and motor bearings	One no. of each type and rating	
ii	PAC motor lube oil motor and motor bearings	One no. of each type and rating	

iii	SAC motor and motor bearings	One no. of each type and rating	
iv	SAC motor lube oil motor and motor bearings	One no. of each type and rating	
F	Fire hydrant system		
i	Fire hydrant motor and motor bearings	One no. of each type and rating	
9	Spares For C&I Systems		
A	Spares for Control System/DDCMIS/PLC (covering FSSS/Turbine/OLCS/CLCS Including Gas Turbines)		
i	Processor Card / CPU/ DPU	10% or 1 No. min.	
ii	Electronic modules of each type and model for control system, Data communication system, Master and Slave Clock etc. (This shall include all type of cards like I/O cards, Remote I/O cards, communication/Interface cards, controller cards, CPU module or Card, logic cards, Bus coupler/Interface hardware / other communication devices. etc.)	20% of each type and model or minimum 2 nos which ever is more.	
iii	Power Supply cards / Modules & Power Packs for control system	10% of each type, model and rating or 1 no. Min	
iv	Prefab interconnecting cables with connectors	1 no. of each type and length	
v	System bus cable with connectors	1 no. of each type and length	
vi	I/O bus cable with connectors for remote I/O units	1 no. of each type and length	
vii	Servers for different functions with operating system and software loaded complete with all accessories	1 No. for each function	
viii	Fuses of different ratings for UPS, DC power supplies and electronic cards	1	
B	C&I spares for main turbine, TD BFP and HP Bypass		
i	Electro-Hydraulic Converter coil and position feed back transmitter for main turbine	1 set	
ii	Position feed back transmitter for main turbine EHC / CV /IV	1 complete set required for 1 unit.	

iii	Turbine trip solenoid / complete trip device	1 complete set required for 1 unit.	
iv	TSE Thermocouple	1 set	
v	TSI sensor for axial shift, expansions, speed and vibrations	1 complete set required for 1 unit.	
vi	Electronic Cards/PCB's/interface units etc. of all types used in Turbo supervisory system	10% or 1 no of each type whichever is more	
vii	CJC box	1 no. for each type thermocouple	
viii	Electro-Hydraulic Converter coil and position feed back transmitter for TDBFP turbine	1 set	
ix	Electro Hydraulic Converter (TDBFP)	1 No.	
x	RTD for BFP thrust pad	1 Set required for a BFP	
xi	Servo valve	1 No	
xii	Blocking Unit	1 No	
xiii	Oil line hoses	1 set required for 1 unit	
xiv	Feedback transmitter	1 No.	
C	C&I spares for boiler, CLCS & OLCS		
i	Solenoid valve complete for DC solenoids of FSSS	1 No. of each type	
ii	Pneumatic regulating actuator including control valves, blade pitch and vanes	1 No of each type	
iii	Diaphragm for pneumatic actuator	2 Nos of each size	
iv	Electric regulating actuator including control valves, blade pitch and vanes	1 No. of each size and rating	
v	Pneumatic positioner	1 No. of each type	
vi	Scoop actuator motor with brake	1 No.	
vii	Scoop actuator gear box	1 No	
viii	Scoop feedback transmitter	1 No	
ix	Controller module for scoop tube actuator	1 No of each type	
x	Transmitters used in protection circuits of Boiler, Turbine and major auxiliaries	1 No. each range	
xi	Switches used in protection circuits of Boiler, Turbine and major auxiliaries	1 No. each range	
D	Control cables		

i	Instrumentation cables of various types including shielded, twisted pair cables for analog & binary signals, thermocouple extension cables, heat resistant Teflon insulated cables.	1 KM of each type	
E	AHP		
i	Clinker grinder/slag crusher assembly including its motor	1 set for units having 100% SC	
		2 sets for units having 50% SC	
ii	Grinding Rolls of Clinker grinder/ slag crusher	1 set per unit having 100% SC	
		2 sets per unit having 50% SC	
iii	Bearings with plumber blocks of Clinker grinder/ slag crusher	1 set per unit having 100% SC	
		2 sets per unit having 50% SC	
iv	Gear Box for clinker grinder/ slag crusher	1 sets for unit having 100% SC	
		2 sets for unit having 50% SC	
v	Internals including gear set, bearings of Gear Box for clinker grinder/ slag crusher	2 set for unit having 100% SC	
		4 sets for unit having 50% SC	
vi	Scrapper Conveyor chain	2 set for unit having 100% SC	
		4 sets for unit having 50% SC	
vii	Scrapper bars complete with fixing lugs, guide pulley assembly with shaft, bearings etc ,drive end	1 set for units having 100% SC	
viii	sprockets, sprocket segments	2 sets for units having 50% SC	
ix	Bottom ash hopper cooling pipe fittings , inspection/manhole glasses and nozzles for all hoppers of one unit	1 set	
x	Fluid coupling for SSC/clinker grinder	2 set of each type	
xi	Screw conveyor assembly	1 set	
xii	Flights for Screw Conveyor	2 sets	
xiii	Bottom ash transfer pump assembly with motor	2 sets	
xiv	Jet pump assembly	1 sets per unit	
xv	Ash slurry disposal pump assembly complete	One set of each type	

xvi	Fluid coupling with scoop control for Ash slurry disposal pump	1 set of each type	
xvii	Gear box for Ash slurry disposal pump	1 set of each type	
xviii	Internals of gear box	1 set of each type	
xix	V-belt	2 sets of each type	
xx	Impellers, Liners (Volute & suction / discharge)	One set of each type	
xxi	Pump Bearings, sleeves, bearing housing	2 sets of each type	
xxii	Seal water pump assembly including its motor	1 set for each type	
xxiii	Ash water pump assembly including its motor	1 set for each type	
xxiv	Ash water pump bowl assembly & bearing housing assy (for vertical pumps) or rotating assy with bearings (for horizontal pump)	1 set for each type	
xxv	Vacuum pump assembly including its motor	1 set per unit	
xxvi	Ash water line valves (above 100 NB)	2 nos of each type	
xxvii	Ash Slurry line valves	2 nos of each type (knife valve) 1 nos of each type (plug valve)	
xxviii	Ash feed valves below ESP hoppers	10% of total population	
xxviii	ESP hoppers & buffer hoppers level indicators (High &Low)	10% of total population	
xxviii	Fly ash isolation valves (Each type)	10% of total population	
xxviii	Jetting nozzles (each type) for ash handling applications such as flushing box, sluice trench, wetting head, air washer unit etc	10% of total population	
xxviii	Fly ash conveying line couplings(each type)	10% of total population	
xxviii	Bag filters (for buffer hoppers & Silos)	1 set of each type	
xxviii	Ash slurry disposal pipe couplings(each type)	10 % of total population	
xxviii	Fly ash pneumatic valves (each type)	5 % of total population	
xxviii	Ash Slurry Pipelines	10 % of each type of total population	
xxviii	Refractory	10 MT	

Note : 1 set means items required for complete replacement in one equipment